



AMERICAN GAS

Association

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MAY 1947

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"Americana Kitchen" . . . Planned with true American ingenuity to get things done in the simplest, most successful way possible! For this latest **"New Freedom Gas Kitchen"** is built around the greatest work-savers ever! *Time-saving food preservation* with a new silent Gas refrigerator that has room for a week's groceries plus 60 packages of frozen foods. *Constant hot water*

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Works while you play — this super-modern Gas range with automatic clock control cooks a complete oven meal by itself—turns Gas on and off at right time and temperature.

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To be sure you get all these features look for this "CP" seal. It's your guide to the best in modern automatic cookery.



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The Wonder Flame that Cools as well as Heats

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A major disaster in Texas City, conferences in Buffalo and Cleveland, numerous meetings and reports, made April 1947 an eventful month for the gas industry. . . . In the stricken Texas community natural gas company crews and officials performed heroically amid perils of fire and explosion. . . . Accounting and technical conferences drew unusually large delegations, examined current problems and passed on valuable data. . . . The importance of strengthening existing bonds between the gas industry and cooperating groups such as the Gas Appliance Manufacturers Association was stressed by R. H. Hargrove. Right now is the time to tighten these bonds that the valuable gains made by the industry will be maintained and supplemented. . . . A community problem, also a gas man's problem, is urban decentralization. B. T. Franck suggests that gas company sales departments help civic groups prevent growth of blighted urban areas. . . . Indication of gas industry progress is the revision in favor of gas of the fuel cost ratio at the Army's new veterans' hospitals. . . . Research reports bulk large in this issue—fitting reminders of direct and indirect work underway to help the public enjoy even more of the benefits of the "wonder flame"—gas.

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Strengthening Bonds of Service

BY R. H. HARGROVE

*President, American Gas Association
Vice-President and General Manager, United
Gas Pipe Line Co., Shreveport, La.*

vital problems that bear one on another and which must be solved in orderly fashion. Patience, perseverance and understanding will bring us nearest the goal in the shortest possible time.

THE understanding relationship among its several sectors and the unity and esprit de corps which have long characterized the gas industry are precious possessions that cause many other industries to cast envious glances at us. It is a challenge to all of us to maintain them. These things do not just happen and they do not continue to exist without effort. Periodically we must re-examine the various factors involved and renew our efforts to strengthen the bonds.

The gas utility operator recognizes in the manufacturer of appliances and equipment his strongest ally. Without him we could not at all times "render safe and adequate service at the lowest possible rates," which is our solemn obligation. We are dedicated to that ideal of service and the entire industry must be geared to it. That same ideal has sparked the efforts of our manufacturers and in this common objective we probably find the key to our unity.

The war years and the years since have tested the bonds which hold any industry together. The remarkable war effort of the gas industry did not unduly fray our nerve. But the years since have been trying ones and can easily unravel the closely knit fabric of our industry if we are not overly careful. Let us examine carefully a few of the problems that beset us.

Most important of all perhaps is the problem of supply—supply of materials to produce, transmit, distribute and utilize gas, materials to be made by the use of gas and gas itself. In the minds of many manufacturers this last—the supply of gas itself—has assumed major proportions and has been permitted to push into the background many relevant and important matters. To the utility man materials present such a big problem that other matters are thrown out of focus. Actually we are all in the same boat, faced with

With all of the postwar planning done during war years, the charts, blue prints, programs and designs that were actually laid out and the prognostications on prices, economic levels, money in circulation and employment, there were few who during the war predicted that the year 1946 would operate on the precise economic level that it did, and I doubt that there was even a handful who would have ventured to guess that in that year gas would become the cheapest form of modern heat. And yet, generally speaking, that latter phenomenon actually came to pass.

For years the industry has been selling the idea of availability, universality and dependability of gas. During the war these claims were proved and the general feeling engendered that a user of gas was less subject to the whims and whirls of outside influences than the user of any other fuel. This conviction was strengthened by the demonstrated will of the industry to serve.

Then came surcease from war but strife and turmoil on the industrial front. Those dreamy new appliances did not materialize, those magical gas manufacturing plants that were to convert B.t.u. from the stratosphere did not get off the drafting boards. All that steel pipe that was to take gas service to those two million new homes and put limitless supplies of gas wherever needed either did not come out of the mills at all or, when it did, was allocated to other industries. Some materials came out not as pipe but as steel plates for water heaters, furnaces and other appliances. Those millions of employees who were to transform over night into a veritable Garden of Eden, the dull drab world of yesteryear,

Presented at G. A. M. A. Annual Meeting, Chicago, April 14-16.

● Opposite: Like a sentinel only a few blocks from the Travelers Tower landmark (seen in the background) the Front Street Plant of The Hartford Gas Company keeps day and night vigil over the comfort and convenience of Connecticut's capitol city.

spent time in picket lines and other pursuits and did not rush into the promised land of industrial production.

There were some other problems too that kept gas pipe out of the ground, machinery out of the gas plants and equipment out of customers' homes. Matters like industry investigations, rate problems, holding company dissolutions and regulatory authorities' delays diverted our attention and absorbed our energies. And growing bigger all the time was the demand for gas service, born of confidence in our industry and nurtured in numerous ways.

Faced with unprecedented demands for service and with limited supply facilities, our companies have had to make some decisions. Many of these decisions have not been to the satisfaction of many of you manufacturers; neither have they been to us. Some of our decisions may not be fully understood nor realized by the public sufficiently to avoid a disturbance of our public relations. Some decisions may have gone too far, others not far enough nor made soon enough. There had to be action and readjustment and time was often of the essence.

Progress Being Made

I doubt that we are through those trying times as yet. Materials are not flowing in sufficient quantity to permit our utilities to augment their facilities sufficiently this year to take on all available business. We are faced right now with the necessity for rate increases in many sectors. Some markets and some business may be permanently lost. There is not too much relief in sight for the present year and no one can say with certainty when the situation will be entirely corrected. But progress *is* being made. Over a billion dollars worth of gas construction work is awaiting the availability of materials and additional plans are being made continuously. It is my firm belief that this period of economic uncertainty is but a temporary one and that if we act with firmness, understanding and determination now we shall emerge at an accelerated rate to a stronger position than ever before. This is by no means a time to be discouraged.

The combination of excessive demand and limited facilities has brought about a condition unprecedented in our

industry's history. Please do not interpret me as soliciting either sympathy or indulgence. I simply believe that there has been lack of full understanding of the problems involved and I believe at the same time that with full understanding and a resolve to act, the gas industry will overcome its present predicament just as it has overcome numerous other challenges throughout its history.

Our basic structure is sound. We have reliable knowledge of the existence of proved resources of natural gas in greater quantity than ever before. New reserves proved during the last year alone were almost three times the total amount of gas taken from the ground. Through research we are learning more every day about how to convert our vast stores of coal and oil into the product we serve. Through research and promotion we are, in spite of some adverse sentiment, building greater markets for our product and providing the wherewithal for serving it. Before long we shall be back in the driver's seat, pushing for all it is worth to get a larger slice of the customer's dollar away from our competitors. The comprehensive advertising, promotion and other aggressive programs of the American gas industry offer sufficient proof of this assertion.

The slow return to active selling has brought about some uncertainty, some questions, even some doubts as to what the future holds. Distribution plans of manufacturers have not all been delineated. Sales policies of some utilities have not been settled or explained. Of course strains have been put on our distributive machinery just as on our production machinery. Again patience and understanding are requisite.

You will recall that the Executive Board of the American Gas Association several years ago adopted a statement of principles governing dealer relations. A number of state and regional associations and many individual companies since have adopted this or similar codes. The gist of these principles is that the utility will assume the responsibility for setting up and maintaining a healthy merchandising climate within which dealers can become vital marketing factors and operate at a profit. Naturally conditions vary in every community and the plans adopted must likewise vary. It is to the credit of the gas utilities

and their staunch friends among the manufacturers, I believe, that solutions are being found to most of the questions arising in connection with the dealer problem. Certainly manufacturers must find new dealer outlets and utilities must help in this search and at the same time take the lead in pioneering new ideas and new appliances. The ideal for which all must strive is the sale of the maximum number of appliances in each community with maximum profit to the manufacturer and dealer and maximum profitable sales of gas by the utility.

Added Gas Uses

Statements are sometimes heard to the effect that the gas utilities are trying to bar the new manufacturer of equipment who is trying to enter the field, that the large manufacturers are favored over the smaller ones, or that quality merchandise is being sacrificed for cheap articles. I think that careful analysis will prove that the gas utilities, giving normal conditions, are striving insofar as possible to encourage adding to their lines the maximum number of high grade, trouble-free appliances. Naturally they would tend to lean toward manufacturers who have demonstrated their willingness to work for the same end. The utilities are on a continual watch for added uses of gas, for new and improved ways of doing things, for lowered costs. They are also equally aware of the ever present specter of competition and are looking for effective means of meeting it.

Over all lies that devotion to service to the customer. All this spells quality, dependability and economy as the watchwords for securing greatest cooperation. I think it can be safely said that the manufacturer of gas appliances whether he be large or small, new or old, the manufacturer of one product or of a complete line, who makes quality goods, sells them at a reasonable price—not necessarily a cheap price—and is genuinely interested in the gas business and the customers it serves, is going to receive a warm, friendly welcome from the gas companies and full cooperation in selling his wares at a profit.

In this connection I would mention a certain asset (*Continued on page 255*)

Emergency Action in Texas City

Employees' heroic efforts successfully meet one of greatest challenges in the history of Houston Natural Gas Corp.

GAS service to residents of Texas City, Texas, was interrupted for only five hours on April 16 when explosions and fire made that community the scene of one of the nation's greatest tragedies.

The Houston Natural Gas Corp. maintains district office headquarters at Texas City and the district ranks third largest in size, with reference to number of customers served, among the 16 which make up the Houston Natural Gas system outside of metropolitan Houston.

Immediately following the first terrific blast at 9:12 o'clock on the morning of the explosion, gas was turned off at the main gate at the city limits of Texas City. First indication thereafter to reach the Houston office that anything was wrong came when the remote control metameter chart reflected an absolute drop in pressure. Minutes later a communication told that the Monsanto Chemical Co. had blown up.

Vice-President E. S. George and Division Superintendent J. M. Young swung into action instantly and ordered service and main line crews to the scene of the disaster. Two fully-manned service trucks took off at once on the 50-mile trek from Houston, with two other service trucks starting out at the same time from the company's Tri-Cities office, 32 miles away. A couple of main line crews also were dispatched to join forces with the service crews. Additional company men reported from the Alvin, West Columbia, El Campo and Wharton districts, bringing the number of Houston Natural emergency workers to approximately 60.

Upon arrival in Texas City, Mr. Young's initial step after learning from

District Manager J. S. Sullivan that all local employees were safe, was to make a beeline for the company regulator station feeding off the Monsanto line. He cut this station off completely with the heart of the blazing inferno only two blocks distant.

Next move was to map off the entire town by sections and assign crews to cover each specific section. Every home was visited in this systematic manner and in each instance the meter was turned off at the riser. In one section near the Monsanto plant, the crews were forbidden to enter at the outset because of poisonous gases. After waiting an hour or so, however, the men went ahead and turned off the gas at 250 wrecked homes in this devastated area. All told the gas was turned off at some 3,150 residences within a period of two hours.

Shortly after noon, with fuel badly needed to meet the urgent demands of hospitals, cafes, morgues and emergency stations, the company began feeding gas back into the lines until its system was packed to the required pressure with gauges indicating no leaks.

Service Restored

The service crews were then reorganized and sent back over the same residential area to turn the gas back on. As less than 15 percent of the homes were occupied at this time due to the city-wide evacuation, the turn-ons were relatively few. Each day thereafter, with gas company trucks constantly patrolling the city, additional turn-ons were made until one week later gas service had been restored to 90 percent of the residences which were not either condemned as unfit for living or totally destroyed. It is estimated that Houston Natural will lose some 400 accounts in damaged buildings which will not be rebuilt for habitation.

Almost miraculous is the fact that with huge pieces of flying steel plowing tremendous holes in the ground over a radius of several miles, only one company 1¼-inch service line was broken. The greatest equipment loss to the company, and that relatively small, will result from broken meters caused by concussion.

All windows were blown out of the district office and its doors were torn from their hinges. One inside partition

which separated the district manager's office from the front office, was crumpled by the blast. Flying glass caused minor damage to office furniture.

None of the company workers, either in the office or on the outside, were injured. Fortunately, the field men were assigned to a section of town considerably removed from the explosion when the blast occurred. The families of employees also escaped injury, although all of their homes suffered some damage, mostly from broken glass. A representative of the company's personnel department contacted each employee, determining his individual welfare and offering housing and financial assistance as needed.

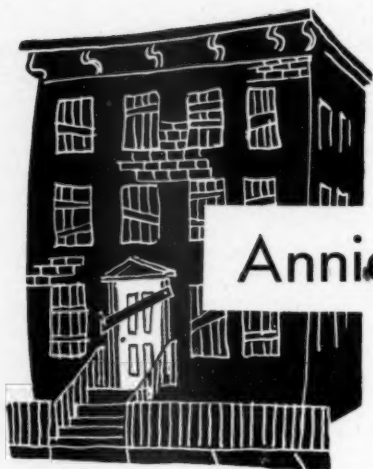
Check Installations

Representatives of the company's utilization department checked all air conditioning installations prior to the time the gas was turned back on, re-wrapping some of the ducts and adjusting controls. The units were needed for heating as the day was chilly. A major responsibility still confronts the company in the adjustment of other automatic gas household appliances.

The company regulator house near the Monsanto plant was completely destroyed, but the inside equipment remained intact with the exception of one small gauge connection which was severed by flying debris. None of the countless raging fires were attributed to natural gas.

The United Gas Corp. of Houston and the Texas Public Service Co. of Galveston, two privately-owned gas utility companies, during the early stages of the disaster called to offer their assistance both in manpower and equipment, but as the situation remained well in hand, so far as gas company operations were concerned, it was not necessary to take advantage of these timely offers of cooperation.

The disaster, with its death toll approaching the 500 mark and total damage running into many tens of millions, provided one of the greatest challenges which Houston Natural has faced in its 21-year history in maintaining the "continuous, dependable gas service" so frequently mentioned in company advertising copy. Tributes paid to the gas company indicate that it met the challenge well.



Sound urban expansion programs are needed to halt the exodus of thousands of Annies and resultant growth of blighted areas

Annie Doesn't Live Here Any More

BY B. T. FRANCK

Vice-President, Milwaukee Gas Light Co., Milwaukee, Wisconsin

WHAT if Annie doesn't live here any more?

The Annie I mean is the empress of a household. She used to live in the heart of the city and had a gas range, gas automatic water heater, a gas refrigerator. Maybe she had a gas furnace too. And now she lives not here but in Swankmore Manor on five acres only 30 minutes fast drive from the city. Perhaps we have been able to run a gas main to her home—perhaps not. Annie has been joined by Rosie, Josie, Sadie, Flora and Eleanor and thousands of others and it looks like more thousands will join her in the coming few years.

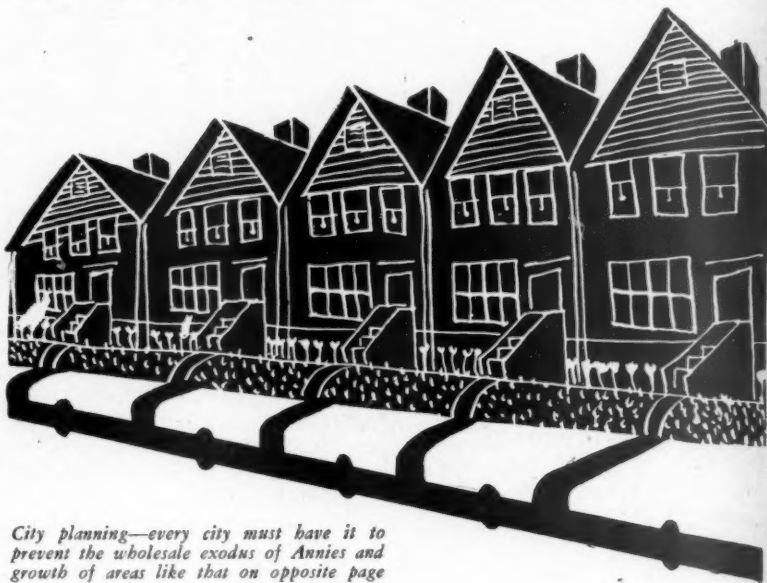
What does this move of Annie's mean to us—this persistent trek of city residents to suburban and even adjacent rural areas—this trend which land experts call *urban decentralization*?

One of the results is that large, central urban areas have been depopulated and have deteriorated to the point where aesthetically and economically they are civic liabilities. In addition to creating other evils, these blighted areas necessitate heavy, discriminatory taxes on other central property; so do the outer-fringes of a community. Incidentally, these outer-fringes usually are the direct consequence of decentralization. Moreover, the causes for this abandonment of cen-

tral areas and creation of outer-fringe areas usually are not accidental.

Please do not hastily conclude that this is merely a problem for our financiers and technical friends to ponder. It is more than that. It affects us—decreases our opportunity to render service, increases the amount of our investment

My interest in this subject was at first purely accidental. In the early spring of 1944, an invitation was extended to me to address the Milwaukee Real Estate Board. The executive secretary of the board casually suggested a title, "The Job Ahead for Salesmen." It was not until a few days before the meeting that



City planning—every city must have it to prevent the wholesale exodus of Annies and growth of areas like that on opposite page

per customer and daily increases the cost of operating within our respective service territories.

On deeper reflection, you will observe that the activities of our sales departments can influence and help arrest the trend toward decentralization and guide this movement into a more profitable channel. The primary contacts with realtors, builders and architects are made by our sales personnel, and it is these same realtors, builders and architects who influence in great measure where people stay and where they move.

I became aware of my ignorance regarding "the job ahead for salesmen" in the real estate business.

Fortunately, a group of related subjects were concurrently receiving more than ordinary community attention. They suggested an idea. Ranked in the approximate order of the local publicity accorded, they were: elimination of a blighted area, postwar construction other than housing and postwar residential building.

It occurred to me that progress on the subjects I just mentioned could be ad-

Abridged version of talk presented at Sixteenth Annual Midwest Regional Gas Sales Conference, Chicago, March 17-18.

vanced enormously by the wholehearted support of the real estate profession. It became increasingly apparent that not only *how many* houses would be built after the war, but also *where* houses would be built, depended in a great degree upon the real estate operators and their associates.

Mindful of these considerations, I urged the real estate profession to concentrate its selling efforts on urban and already-improved suburban properties.

Here's where we come in.

We can and should help mold thinking by constantly stressing the truth about home ownership. Our contact men should be instructed to emphasize the advantages of living in areas which have sanitation, utilities, good transportation,

plans to offset decentralization recommend nothing less than the razing and rebuilding of vast areas. The result of such an approach usually is a grandiose plan which falls of its own weight or encourages a raid on the Federal Treasury.

To be sure, some areas require "block buster" treatment, yet others need only thinning-out and fixing-up. Ignoring the complications of slum clearance and housing for the needy, which I concede to be problems but do not intend to discuss now, I believe that rehabilitation and proper maintenance of urban housing is a sound, sensible approach to retarding decentralization.

In my travels in many cities, I have driven through many sections which, if

have a "house of the month" program. Guided by the advice of experts, each month we will select an old dwelling on an "in town" location. We will modernize it, inside and outside, on a practical basis which can be emulated by many home owners.

If our idea caught hold it might inspire the fellow next door or the man across the street to fix up his own home. Think what could be accomplished if this program had the active support of city officials, banks, insurance companies, building and loans societies, newspapers, downtown merchants and other businesses with a direct interest. Instead of a few salesmen, we would have hundreds. I am confident that such determined zeal, capably directed, in a few short years would accomplish miracles.

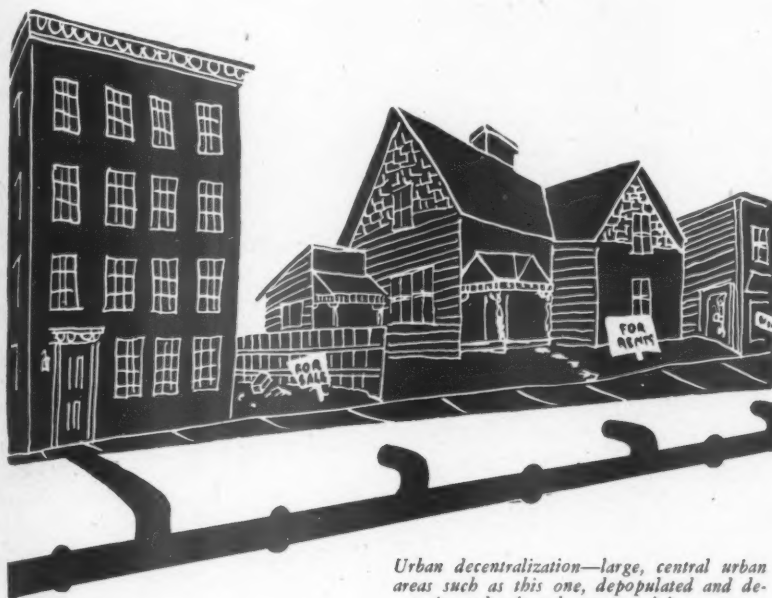
You may rightfully ask, "What has been accomplished so far in Milwaukee?" Frankly not much, when one views the vast potential of the program. Building material shortages, labor difficulties, governmental restrictions during the last few years, have had an adverse effect. However we have been fortunate. The *Milwaukee Journal*, Wisconsin's largest newspaper, in 1946 launched a three-year program with the slogan, "Beautify Milwaukee—Plant, Repair, Paint." Last year the *Journal* offered \$5,000 in prizes. There were over 1,000 entrants and inquiries came from all over the nation. Collateral accomplishments were the sprucing-up of many downtown buildings and better policing of the city's parks. Even better results are expected in 1947 and 1948.

What if "Annie doesn't live here any more?"

Within two and one-half blocks of our office building there is a public grade school which the Board of Education contemplates closing. Many residents of this area have moved away. Now the school is filled to only half capacity. While some commercial establishments have moved into this neighborhood, so have automobile parking facilities replaced former homesites. Vacant lots have increased and what housing remains has deteriorated deplorably.

In another section near the downtown area, blight has set in to the point where this neighborhood is a definite liability to the city.

As a gas (Continued on page 256)



Urban decentralization—large, central urban areas such as this one, depopulated and deteriorated, often become a civic menace

snow removal, refuse removal, conveniently located schools and churches, police and fire protection, public health service and the multitude of other conveniences that go with living in a well-operated, established community.

In general, every city has its suburbs with street after street dotted by an occasional house; street after street with all improvements but a long string of vacant lots between each structure. The development of these areas should receive every encouragement in preference to the opening of new subdivisions.

In older downtown areas, too often

no corrective steps are taken, will in a few years sink to the level of our least desirable areas.

In all of these places there are houses which are architecturally correct, structurally sound, but which require internal modernization and external dressing-up. I proposed to my colleagues that when the time is opportune in Milwaukee, if we do go in for model houses, that we take a few structures like those I have described and put them on their feet, rather than go out into the country to help launch new subdivisions.

When our budget permits we will

Gas Prominent At Restaurant Exposition

Exhibits of thirty-two commercial gas cooking appliance manufacturers, A. G. A. display attract thousands of visitors

CONCRETE evidence of the outstanding position that gas fuel and gas equipment maintain in the volume cooking field was supplied at the National Restaurant Exposition in the Hotel Stevens, Chicago, March 25-28. Thirty-two manufacturers of commercial gas cooking appliances staged one of the largest exhibits of any group comprising a little more than 16 percent of the exhibitors of all kinds of restaurant equipment and supplies.

The major manufacturers of heavy-duty gas ranges displayed the latest volume cooking equipment with a remarkably wide variety of complementary bake ovens, broilers, deep fat fryers, toasters, coffee urns, coffee makers, steam pressure cookers, warming tables and large kettles all utilizing gas were exhibited along every aisle and every

floor of the exposition. In addition, gas was extensively used by several coffee concerns demonstrating their products.

Approximately 15,000 visitors attended the 1947 Restaurant Show and almost every one of them saw the attractive Commercial Gas Cooking Center display of the American Gas Association. Thousands stopped to look, study and exclaim at the scale model commercial kitchen. Attracting similar attention was the self-turning "book" with 18-inch by 24-inch pages containing display photographs of eight of the restaurant, hotel or institution gas kitchens which were winners in a recent commercial kitchen layout contest.

The A. G. A. exhibit area was also equipped as a lounge where visiting gas men met and conferred with manufacturers of commercial gas appliances and dealers in restaurant equipment.

Lively interest was displayed in new glass and dishwashing equipment as a result of national agitation for more sanitary conditions in restaurants. This led to numerous inquiries for gas water

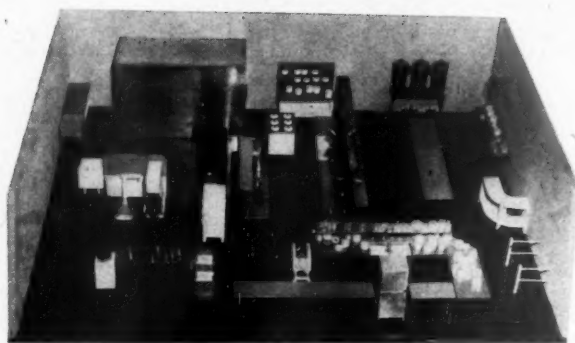
heaters both for primary hot water and booster heaters for sterilization water. The staff on duty at the A. G. A. exhibit handled all inquiries on this and other subjects as well as countless questions and requests from crowds which continually flowed through the aisles.

Due to space conditions in the exhibition hall the gas equipment manufacturers were scattered throughout the exhibit area. The 1948 National Restaurant Exposition in Cleveland, Ohio, will bring these gas equipment manufacturers grouped together in one combined exhibit which will be the largest single display of the entire Restaurant Show.

Manufacturers exhibiting gas appliances were:

Amcoin Corp., American Stove Co., Anetsberger Brothers, G. S. Blodgett Co., Cleveland Range Co., Connerton Appliance Co., Continental Coffee Co., Cory Corp., Detroit-Michigan Stove Co., Doughnut Corp. of America, Duke Manufacturing Co., Groen Manufacturing Co., Gretchen Manufacturing Co., Hart Manufacturing Co., Hill-Shaw Co., B. H. Hubbard & Son Co., Lansing Manufacturing Co., Lyons-Alpha Products

(Continued on page 236)



Popular scale model commercial kitchen in the A. G. A. display at the National Restaurant Exposition



A. G. A. Commercial Gas Cooking Center (display) was also fitted out as a comfortable lounge for visiting gas men



Commercial gas representatives of The Peoples Gas Light and Coke Co., Chicago, attending the A. G. A. exhibit, seated, left to right: Arthur Siebert, John Cultra, Albert Ward and Henry Anderson. Standing, left to right: Victor Rozanski, John Leen and Michael Lambke

Dodge Bodies Baked by Gas Ovens

Products of combustion are mixed with recirculated air and then blown at high velocity into zoned ovens where air movement is greater than indirect-fired ovens

IN planning its new production lines, Dodge Division, Chrysler Corp., decided to find a method of baking synthetic body finishes that would: (1) overcome the disadvantages of indirect-fired ovens, (2) prove more economical than other baking methods, especially when handling large tonnages of sheet metal, (3) provide a better and harder bake without affecting light colors.

These objectives were realized through a nine month development program which produced direct-fired ovens that safely drive off volatiles and bring bodies to baking temperatures in less than five minutes. Products of combustion are diluted with air and blown into the oven at high velocity. Recirculation is used so heat recovery is high, while heat input is sharply reduced because less air is heated. The entire body-finish-

BY RUPERT LE GRAND

Associate Editor, American Machinist

ing department in the Dodge main plant has been revamped to take advantage of the new direct-fired process.

Here are the results apparent from several months of operation:

1. A harder baked finish is secured without impairment of luster.
2. Light colors are not affected.
3. Fuel savings are considerable.
4. Floorspace for ovens has been reduced 50 percent.
5. No long ducts are required; heaters are out of the way on top of the oven structures.
6. Power consumption has been reduced because smaller volumes of air are handled.

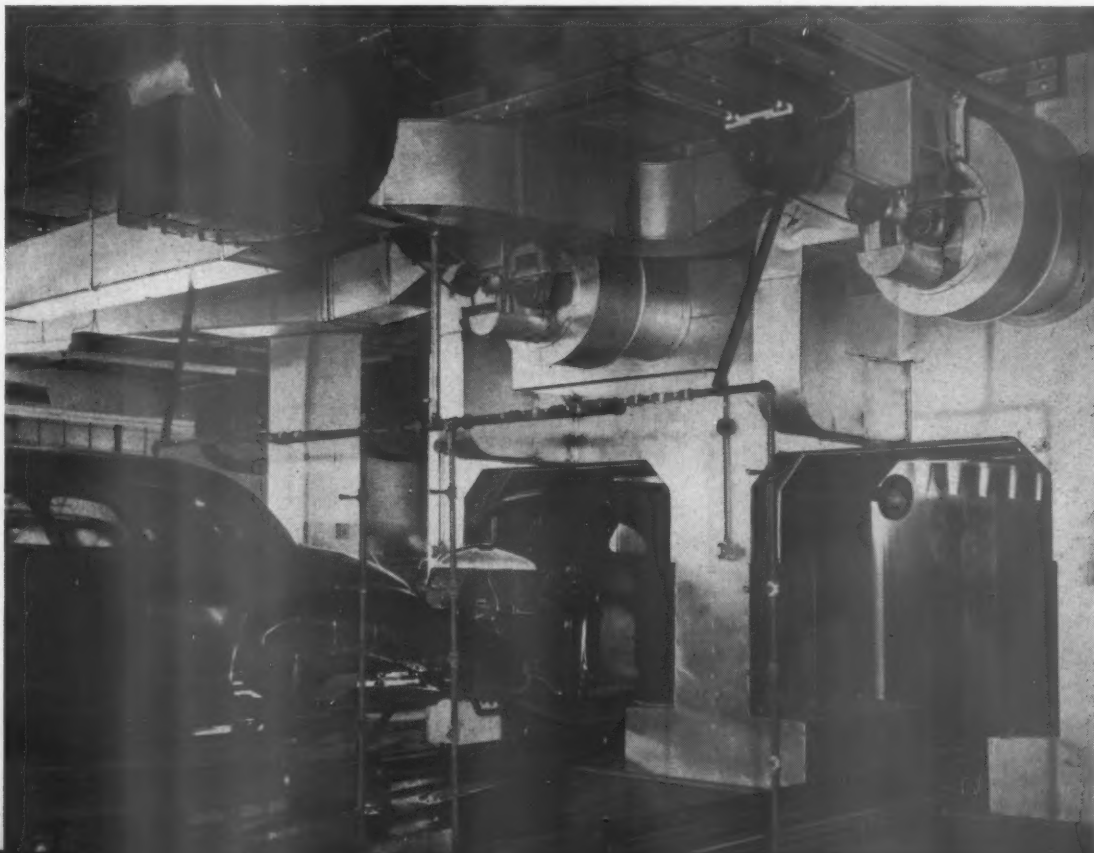
7. Bodies emerge from ovens in cleaner condition.

8. Ovens are cleaner; drippings do not collect on floor. Cleaning is no longer an important maintenance task to avoid fires.

To understand further the importance of the new baking process, consider the usual arrangement of indirect-fired ovens in body-finishing departments. In the case of Dodge, the old ovens were approximately twice the length of the new ones. Air circulated in the ovens was heated by heat-transfer equipment and fed into the ovens by long ducts. Large volumes of air were handled at comparatively low velocity. Heat was absorbed slowly by the body; some 30 minutes were required to drive off the volatiles and bring the metal to baking

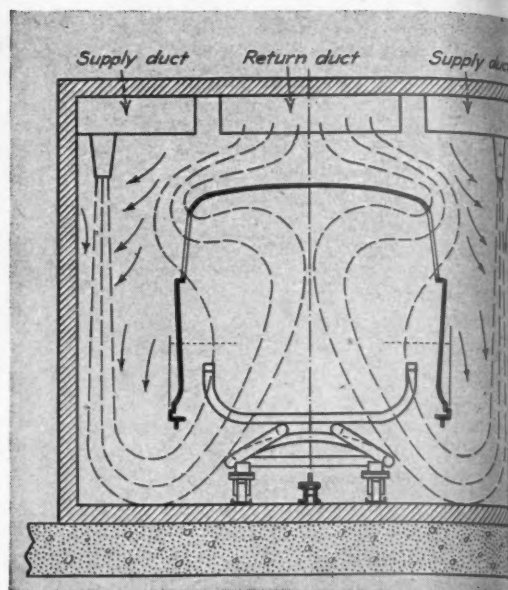
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Automobile bodies emerging from the primer-baking ovens are sprayed with water to reduce temperature to comfortable level for wet sanding. Fans at top-end of oven prevent spilling recirculated air into room





All duct work is in the roof of the direct-fired oven to avoid places for dust to collect. Nozzles at either side direct heated recirculated air down to the floor of the oven



Heated air issues from nozzles in the supply ducts at high velocity, entrains oven air (arrows) and causes air movement several times the heater-fan delivery

temperature. Actual baking took about 17 minutes, and hardening of the finish required several additional minutes. Obviously, too much time and fuel were being consumed in bringing the body to baking temperature.

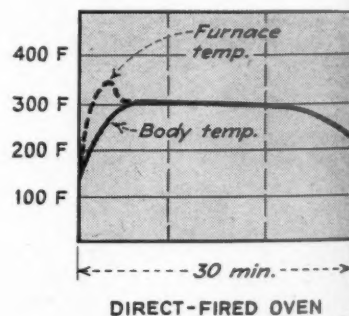
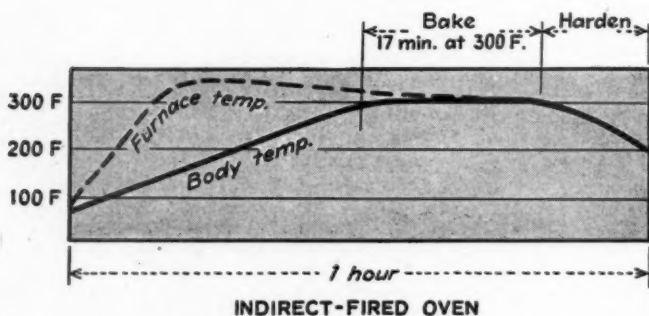
In considering design of a new oven, engineers studied baking by various principles. Ultimately, it was decided that a straight convection oven with a properly designed circulating system would perform as well as any other type and have important advantages. On this basis, an oven for drying finishes was evolved to provide rapid heating rates, uniform temperatures, flexible opera-

tion, simplicity, and safe, economical operation.

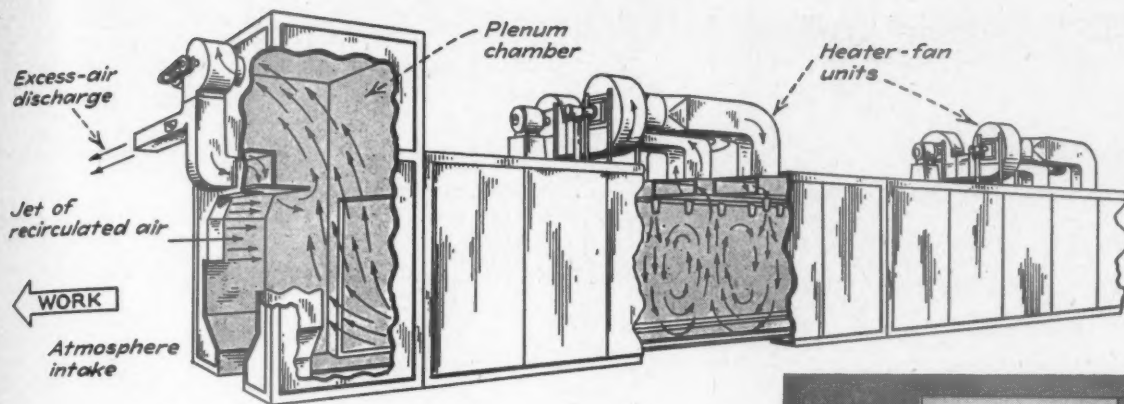
The rate of convection heating depends on two factors: (1) the temperature difference between the circulated gases and the work, and (2) the velocity of the gases flowing over the work. For rapid heating rates, the temperature differential, the gas velocity or both may be increased. But increasing the temperature difference between heated gases and body introduces problems in maintaining uniform temperatures throughout the oven without a complicated distribution system. So an increase in air velocity was chosen as the best means to increase the heating rate.

Maximum flexibility and control are secured by dividing the oven into zones: a heating zone to bring the body rapidly to baking temperature, one or more holding zones and an exit zone. Each zone has its own circulating system with individual heater and fan, and its temperature is controlled independently of the other zones. By breaking the oven into zones, fans and blowers are kept small, and it is possible to mount the heater-fan units overhead. Thus, supply and return ducts are built into the roof of the oven zone, keeping the floor and lower side-walls clear to facilitate cleanliness.

The heater-fan units employ a novel



Comparison of body baking time in old-style indirect-fired oven (left), and direct-fired oven (right) shows that in the latter case, automobile bodies reach baking temperature in less than one-sixth the former time



Direct-fired ovens are divided into zones, each with an individual heater-fan unit on top. A vestibule at either end of ovens prevents leakage of recirculated air and ingress of atmosphere

method for heating the recirculated air. An exhaust fan sucks air from the return duct of the oven zone and feeds it into what would normally be the outlet of a fan housing. As the recirculated air enters the scroll of the heater unit, it passes over a large mushrooming flame produced by an automatic gas burner firing into one side. The products of combustion, mixed with the recirculated air, leave the opposite side of the heater and enter the oven supply ducts. Gas velocity is in the order of 3000 fpm.

Ductwork in the roof in each oven zone consists of two supply ducts on either side and a return duct in the center. Supply ducts discharge heated, recirculated air at velocity of 2000 fpm. from tapered sheet-metal nozzles pointing toward the oven floor. Number and spacing of the nozzles depend on the heating load in the zone. The nozzles act like unshrouded inspirators, entraining the oven air around them, mixing it with the air from the nozzles and putting the whole mass into motion, thus increasing the actual circulation in the oven to several times the volume handled by the fan. Actual air movement within the oven may be six to 25 times as great as in an indirect-fired oven.

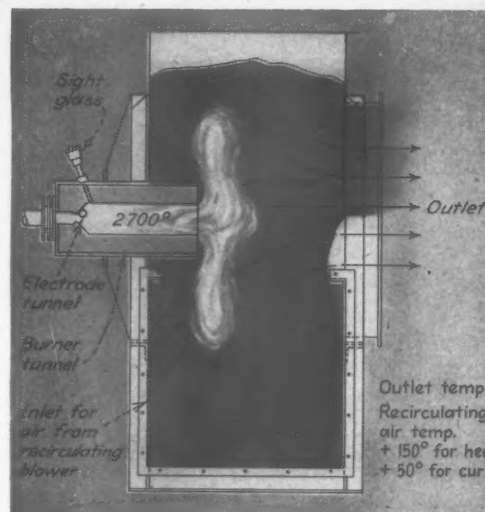
Initial downward movement of the air carries most of it to the floor (along the side of the oven) where its direction is reversed and it flows upward through the center of the oven to the return duct at the center of the roof. This downward air flow has a definite advantage in baking finishes on bodies and other sheet-metal work. In the case of bodies, the heaviest metal section is the sill,

which is difficult to heat as rapidly as the body panels. But with the air flow obtained in this arrangement, the sill is heated first. Furthermore, any drops of paint are coagulated quickly and do not drop onto the oven floor.

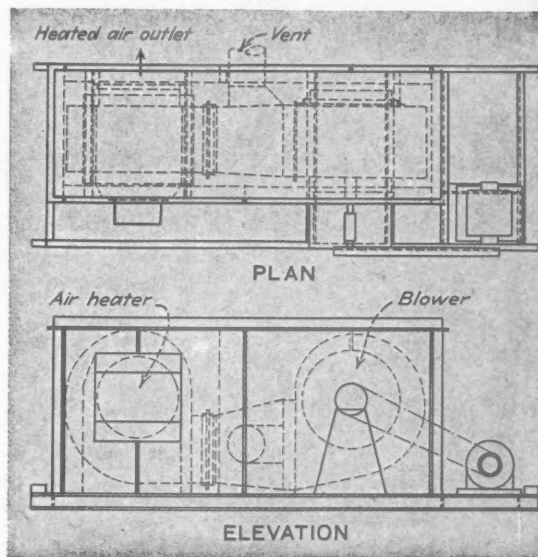
No large temperature differentials can exist within the oven because the air from the nozzles mixes rapidly with the air in the oven, before coming in contact with the work. Sufficient free space is provided at the sides of the oven for free downward circulation between the oven walls and work. The two curtains of air along both side-walls and the flow of air across the bottom of the oven effectively envelops the work in a rapidly moving mass of air at uniform temperature. Thermocouples placed in the two sides, top and bottom of a body moving through an experimental oven showed that the bottom came to temperature first, the sides next and the top last, and that all sections of the body were at almost identical temperatures during the baking period. Since natural convection currents are not depended on, the oven is largely self-balancing.

Circulating System

The circulating system is designed to meet requirements with a minimum of adjustments. No adjustments are required on the supply side. Return ducts are provided with adjustable openings, and an adjustable fresh-air inlet is provided to the circulating fan to



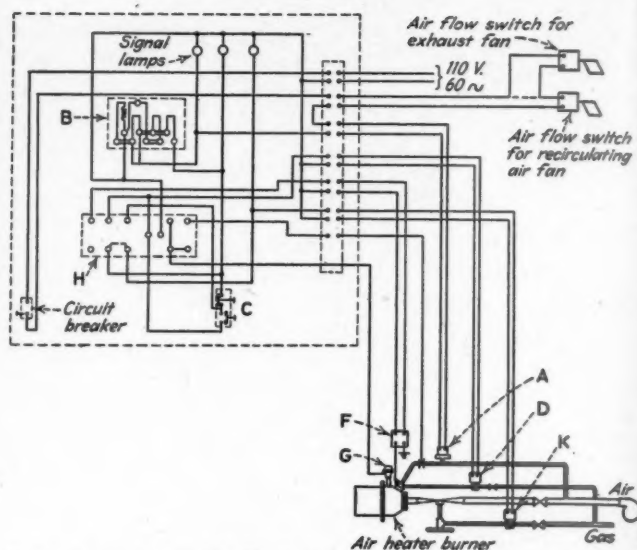
Recirculated air is heated to desired oven temperature by blowing over a flaming gas-air flame



Heater-fan units are self-contained in an insulated box within an angle-iron framework. Motors of 7½ horsepower are used



Skilled attendants check operation of heater-fan unit above control station and control temperature at each oven zone



Each oven zone has an individual safeguard system so that the heater cannot be started unless the combination-air blower is in operation and the circulating fan has purged the oven

take in fresh air for ventilation. More than 9000 cubic feet of fresh air are supplied per gallon of thinner that is volatilized.

To prevent loss of recirculated air from the ends of the oven, air seals are provided. Recirculated air leaking from the oven flows into a plenum chamber, where it is sucked upward by a fan in the roof. This fan operates at higher pressure than the recirculated air and discharges the bulk of its output to a

slot directed toward the oven chamber. The extra air is vented to get rid of volatiles. Some air enters the vestibule above the conveyor, but can not get into the oven because of the higher pressure existing therein.

One of the major advantages of direct-fired ovens is cleanliness. Dirt and dust in ovens are problems in baking synthetic enamels. But in this case the bottom of the oven is empty except for the conveyor, making it easy to keep the

equipment clean. In fact, the conveyors and fixtures are the only means for dirt to get into the oven because intake air is filtered. As a consequence, a light gray body, run through the oven five months after cleaning, showed no traces of dirt even though the fixture was incrustated with paint.

Finish coats of all colors have been baked with satisfactory results. Even the most sensitive colors are matched and uniform. This (Continued on page 254)

HEAT REQUIREMENTS AND PRODUCTION OF DODGE BODY BAKING AND DRYING OVENS

Operation	Heat Consumption per Hour of Ovens, Btu.						Time Min.	Bodies Per Hr. Per Line	Conveyor Speed FPM.	Ovens	Heaters
	Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	Zone 6					
1. Alkali wash Bond- erize											
2. Dry-off ovens	2,000,000	1,000,000					5	35	10.5	3	6
3. Primer spray											
4. Primer bake	1,500,000	1,500,000	500,000	500,000	500,000		17	35	10.5	3	15
5. Wet Sand											
6. Dry-off	2,000,000	2,000,000					4		10.5	3	6
7. Sealer spray											
8. Sealer ovens	1,500,000 365°	1,500,000 335°	750,000 325°	750,000 305°	750,000		21	33¾	7.875	4	20
9. Wet sand											
10. Dry off	1,500,000	1,000,000					4	33¾	7.785	4	8
11. Body clean up											
12. Finish spray											
13. Finish bake	(Direct-fired ovens)						35	33¾	7.875	4	24
14. Two-tone & repair bake	2,000,000 295	750,000 275	750,000 270	750,000 265	750,000 260	1,000,000 270	35	33¾	7.875	2	12
										Total	91

Weight of 4-door sedan, as painted. 550 lb.—(new bodies somewhat heavier)

Weight of pipe rack truck. 310 lb.

Weight of 14-ft. section of conveyor. 63 lb.

923 lb.

Spacing of conveyor trucks—14 ft. center to center.

Minimizing Noise of Extinction

Design equation is developed at A. G. A. Laboratories for application to large gas burners and extensive information compiled on the phenomenon of noise extinction

This article summarizes extensive data compiled at the A. G. A. Laboratories in extending studies from small to large burners of the type employed in central heating appliances. Essentially it is a digest of Research Bulletin No. 41, Research in Fundamentals of Noise of Extinction of Large Burners (Project D6R-6-B) just published by the Laboratories under the supervision of the Committee on Domestic Gas Research and recently released to the industry—Editor's Note.

BY EARL J. WEBER

*American Gas Association Testing
Laboratories*

GENERALLY speaking the nature of the phenomenon of noise of extinction may be divided into two categories, depending upon the operating primary air adjustment of the burner. In the first case with an atmospheric burner adjusted for a relatively high primary aeration, conditions for flash-back are established merely by a decrease in input rate which follows gas shut-off and noise of extinction occurs almost simultaneously with gas shut-off. This type may be defined as immediate noise of extinction.

This is shown graphically in the accompanying chart which represents a typical flash-back curve. Point "A" defines the operating adjustment of the burner before gas shut-off at an input rate of 25,000 B.t.u. per hour per square inch of port area and a primary aeration of 70 percent. Upon gas shut-off the input rate decreases rapidly along a line such as AB, entering the flash-back zone at point "B." The fall in rate is probably too rapid to allow an appreciable change in the burner head mixture at the ports. If flames are present on the burner ports when the gas rate reaches point "B" they will serve as a source of ignition for the explosive mixture in the burner head and noise of extinction will result. Therefore, with the operating percentage of primary air above the lower limit of the flash-back curve, immediate noise of extinction will result.

In the second type of noise of extinction where the burner is adjusted for a lower primary aeration the operating air-gas mixture in the burner head must

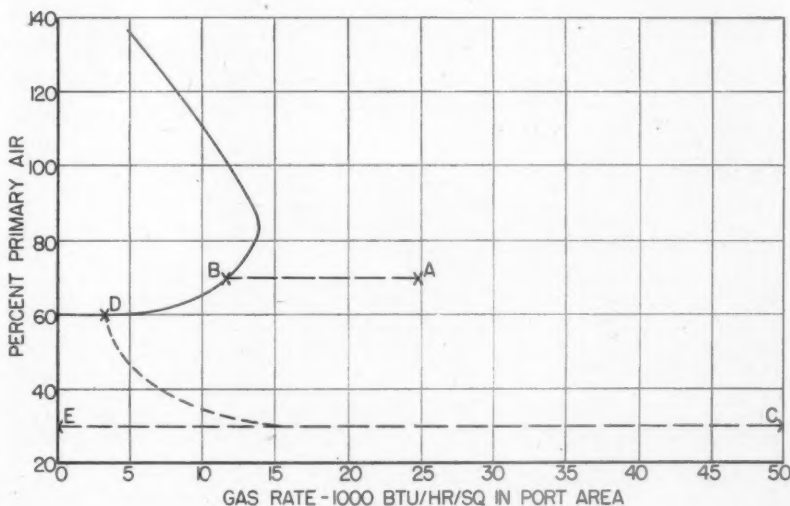
be diluted with air to produce noise of extinction as the input rate approaches zero upon gas shut-off. In other words, since the operating primary air adjustment of the burner is below the primary air value indicating the lower limit of the flash-back zone, dilution of the original mixture with air after gas shut-off is required to produce a condition of gas rate and mixture composition defining a point inside the flash-back zone. This type may be defined as delayed noise of extinction.

This second type of noise of extinction may also be demonstrated graphically. Point "C" on the chart defines the operating adjustment of the burner before gas shut-off at an input rate of 50,000 B.t.u. per hour per square inch of port area and a primary aeration of 30 percent primary air. If the burner air shutter were closed simultaneously with gas shut-off, the gas rate would decrease along a line such as CE. Since this is not common practice, the gas rate would

actually decrease along a line such as CD due to the fact that the air-gas mixture in the burner head retains sufficient momentum after gas shut-off to induce additional air into the burner thereby increasing the air content of the original mixture. When the gas rate and mixture composition reaches point "D" at the flash-back zone, flash-back or noise of extinction will occur if flames still remain on the burner ports.

The decrease in gas rate along line CD is probably very rapid initially, slowing down considerably however as the flash-back zone is approached. The rate of decrease of the gas rate and the fact that dilution requirements to reach the flash-back zone vary with the operating primary air adjustment introduce a time element between gas shut-off and the occurrence of noise of extinction. In some instances noise of extinction may be delayed for as much as one minute after gas shut-off. Undoubtedly the second type of noise of extinction is the more common in actual practice with large burners since they are usually designed for high input rates per square inch of port area which results in low primary aeration.

In calculating the maximum primary



air with which a large burner of given design may operate on manufactured gas without noise of extinction, the following factors must be considered: port size, port area for a given rate, and mixing tube diameter. These factors have been resolved into the following equation:

$$A = \frac{0.31}{a} \left(\frac{P}{(RD)^2} \right)^{1/4}$$

A = maximum percent primary air permissible without noise of extinction (noise limit)

a = area of individual port in square inches

P = gas pressure at orifice, inches water column

R = gas input rate per square inch of port area in units of 10,000 B.t.u. per hour per square inch of port area

D = mixer tube diameter three inches from throat, in inches

Examination of this equation indicates that the noise limit is a direct function of gas pressure at the orifice and an indirect function of port size, input rate per square inch of port area and the diameter of the mixer tube three inches from the throat. Each of these variables will be considered individually in the following with the idea that the occurrence of noise of extinction is dependent upon which time element is shorter, that required for dilution to produce an explosive mixture or that required to de-

crease the input rate per port below the minimum rate necessary to support combustion. This conception is applied only to that condition in which the operating primary aeration is lower than the primary air value indicating the lower limit of the flash-back zone. (See chart.) This is the usual condition with large burners.

Apparently the characteristics of the mixer tube with regard to noise of extinction are entirely defined by the mixer tube diameter approximately three inches from the throat. Thus with all other variables maintained constant the noise limit increases with a decrease in this diameter. Tubes of smaller diameters will offer greater restriction to the induction of diluting air. Since the motivating force or momentum is constant and the restriction increases as the tube diameter decreases, the time element for dilution to produce an explosive mixture is increased as the tube diameter decreases. Hence the noise limit increases with a decrease in tube diameter.

There is no term in the equation for length of mixer tubes since this factor was found to have no effect. The momentum of the mixture in the tube after gas shut-off should increase in proportion to the length of the tube with a resulting increase in induction of diluting air. However, this increased momentum is counterbalanced by a number of other factors.

It may be reasoned that any stack

effect resulting from a difference in height between the port level and center line of the throat would add to the effect of momentum of the gas mixture in the tube. Results of experiments designed to measure the magnitude of this effect were found to be negative.

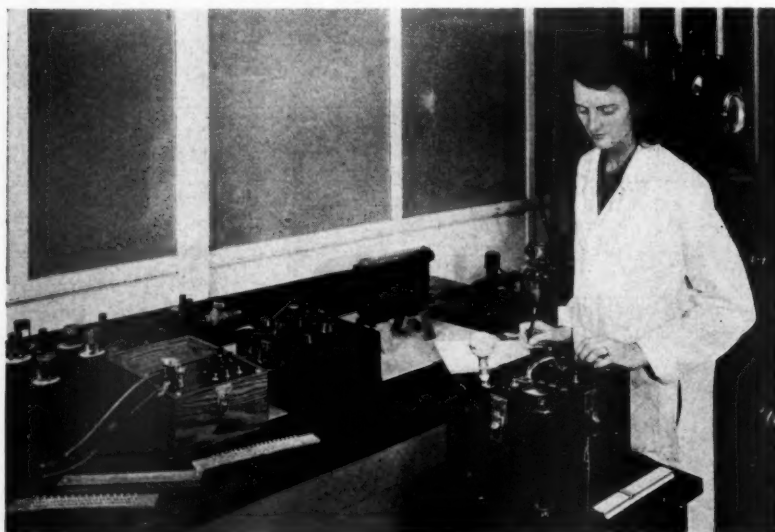
There is also no term in the equation for port area. Actually port area is indirectly a factor since for any given total gas input rate it determines rate per square inch of port area. However, for any given rate per square inch of port area the noise limit becomes independent of port area since under this condition the ratio of total input rate to port area remains constant.

Equation Factors

The equation indicates that the noise limit increases with a decrease in rate per square inch of port area. This latter factor may be varied in two ways: (1) by maintaining port area constant and varying total input rate, or (2) by maintaining total input rate constant and varying port area. Under the first condition with a fixed port area, a decrease in total input rate decreases the momentum of the gas mixture after gas shut-off and consequently the rate of dilution.

When the input rate per square inch of port area is varied by a change in port area the momentum of the mixture in the tube after gas shut-off remains constant since the total gas input rate is maintained constant. The port area may be changed either by varying the number of ports of a given size or by varying the port size for a given number of ports. The latter condition may be considered in the discussion on port size. It is obvious that with a fixed input rate the rate per port after gas shut-off will approach the minimum rate necessary to support combustion more rapidly as the number of ports is increased. Therefore a decrease in rate per square inch of port area resulting from an increase in the number of ports will raise the noise limit.

Maintaining all other variables constant including rate per square inch of port area, the noise limit increases with a decrease in port size. With a given total gas input rate the number of ports must be increased as port size is reduced in order to (Continued on page 254)



Obtaining data for development of empirical formula for noise of extinction limits of large gas burners

Correction of Baking Complaints

A. G. A. Laboratories' testing program provides valuable information to help eliminate poor baking characteristics

BY JOAN HUCK

American Gas Association Testing Laboratories

ONE of the more than 500 requirements that a gas range must meet in order to display the American Gas Association Laboratories Approval Seal is: "The heat distribution in the oven shall be so uniform that plain layer cakes baked at 375 F (± 10 F) for 25 to 30 minutes, unless otherwise specified by the manufacturer, will be evenly browned."

The method of determining whether a range meets this requirement specifies the baking of four cakes simultaneously, using a standard yellow layer cake recipe developed by a subcommittee of the A. G. A. Home Service Committee. The cake pans for this test are number 22 gage aluminum, eight inches in diameter by $1\frac{1}{8}$ inches deep, each containing 0.8 pound of batter. Two pans are placed on the upper rack, one in the left rear and one in the right front corner. On the lower rack one pan is placed in the right rear and one in the left front corner. All four pans are symmetrically located with the distance between them equal to the distance of each pan from the nearest side-wall.

At the end of the allotted baking time, cakes are removed from the oven and allowed to cool to room temperature. Inch square samples of the lightest and darkest portion of both the top and bottom crusts of each cake are selected



Joan Huck points out features of the baking exhibit at the Home Service Workshop which she designed to Helen Kivland, The Ohio Fuel Gas Co., Columbus (center) and Mary Belle Burnett, The Cincinnati Gas & Electric Co., chairman, A. G. A. Home Service Committee

for reflectance measurements with a photoelectric reflectometer. This instrument provides an accurate means for measuring color of the cake samples and eliminates discrepancies inherent in judging by eye. The difference in reflectance between lightest and darkest sections must fall within defined limits in order for the range to pass this test.

The cake baking test is further supplemented by a cookie baking test in which cookies distributed in the oven on a single cookie sheet must brown evenly in not more than 11 minutes.

Once a range has satisfactorily met the cake and cookie baking tests described, we feel that the oven will satisfactorily bake or roast any type of foodstuff provided certain precautions to be pointed out later are followed. We have verified this conclusion by baking pies, biscuits, bread, angel food and sponge cakes in ovens which had satisfactorily met American Standard approval requirements for baking layer cakes and cookies. These ovens were found to be flexible enough in operation to produce good quality baked goods of any type. The baking tests specified by the requirements therefore eliminate poor baking characteristics that might otherwise be encountered.

What About the Complaints?

Now you are probably saying to yourself, "That's all well and good, and we are glad that the Laboratories have eliminated so many baking complaints for

us, but what about the complaints we do receive?"

Surveys made on baking complaints indicate that almost 90 percent of them may be attributed to improper baking methods while the other ten percent are due to a defective range or improper burner adjustment. Let's review some of the factors responsible for baking failures even in an approved gas range oven.

In general, baking complaints may be classified as due to the range itself or to such factors as preparation of batter, pans used, placement of pans or oven temperature.

Possibly It's the Range

When a homemaker experiences a baking failure it is only natural that her first reaction is to blame it on the oven. You on the other hand are sure that she is to blame in view of the high percentage of baking complaints which you find are the housewife's fault. Then there is a chance that the oven may be at fault. For example, you may occasionally find that the kitchen floor slopes sufficiently to throw the range off level.

Tests conducted at the Laboratories to simulate such conditions indicate that tilting the range by elevating one side does not change the evenness of browning except in extreme off-level positions. Tilting from front to back or vice versa, however, does upset heat distribution to such a degree that care should be exercised to see that ranges are always in-

Presented at A. G. A. Home Service Workshop, Cincinnati, Ohio, January 20-23.

stalled level. Then too, off-level positions will produce cakes which are thicker on one side than on the other, a condition which is even more unsatisfactory than uneven browning. A warped oven rack will also cause cakes to bake unevenly and may be a contributing factor to uneven browning in the same manner as if the range were not level.

Some home service girls report having noted that the primary air adjustment of the burner has an effect on distribution of heat in the oven. General opinion is that a lazy soft flame will cause faster baking and browning on the lower rack than on the upper one. Conversely, if

were impinging on the oven bottom as a result of its poor aeration.

As ranges grow older in service some warping or mechanical misalignment of the doors is possible which may permit an increase or decrease in loss of flue products around their edges. The Laboratories found that oven heat distribution is materially affected by any leakage causing even relatively small changes in flue gas travel, although no discernible trend in browning could be established. Relatively minor defects in construction causing slight differences in oven door fit might therefore seriously alter heat distribution in various ranges of the



Placed in reflectometer, "magic eyes" measure light reflectance difference between baked cake sample and standard white surface

the flame is adjusted with too much primary air the top rack will brown faster than the lower.

Tests conducted at the Laboratories indicate that a change in the primary air definitely disturbs the normal heat distribution in the oven, but in a rather unpredictable manner from the standpoint of degree and uniformity of surface browning of cakes. With respect to the opinion that a 'soft flame' adjustment causes fast browning on the lower rack, it would appear therefore that this is a characteristic of the particular range under test. With any range however, this observation might be noted if the flame

same model and construction.

A question the home service girl may be called upon to answer is whether or not polished chromium walls affect browning of cakes. In order to obtain data on this point cakes were baked in an oven having polished chromium walls and compared with cakes baked in the same oven when the polished walls were coated with lamp black. There was no difference in color between the two sets of cakes.

Having assured yourself that the range is not at fault, you start thinking of several things that the housewife herself might be doing wrongly.

Maybe she isn't preparing the batter correctly. As you know, many baking failures can be traced to unreliable recipes, poor selection of ingredients, inaccurate measurements or improper mixing techniques. As home economics graduates you are thoroughly familiar with the effect of these factors on baking results. I would like to call your attention to a booklet prepared by the Home Service Department of General Mills, Inc., entitled "A Source Book on Cake Making," which covers them in detail.

The kind of pans used in baking definitely makes a difference in final results obtained by housewives and if not taken into consideration often may be the cause of baking failures. Foods in dark tin pans and glass or enamel pans bake faster than in bright shiny aluminum pans, and therefore some adjustment in oven temperature must be made to compensate for difference in heat-absorbing properties of these materials.

One gas company home service department suggests reducing the oven temperature 25 F when baking in glass or enamel pans. The Laboratories have never conducted tests to determine what temperature should be used to brown cakes to the same degree in the same length of time, employing pans of different materials. However an oven temperature of 380 F was necessary in roasting beef in a silver-plated glass baking dish to the same internal temperature as an identical roast in a plain glass baking dish at a 300 degree oven setting.

In selecting pans for a given recipe size should be considered as well as material. Too little batter in the pan causes the top of a cake to be light in color. Too much batter results in overflow and burned edges.

Several of the home service girls contacted suggested that I call attention to the fact that the modern oven is generally somewhat smaller than that of an older type range. Some consideration must therefore be given to the relationship of size of pan to size of oven, particularly in the selection of cooky sheets. Many housewives continue to use the large cooky sheet which always worked before and find that in their new oven the cookies just do not brown on top.

"It must be the oven then—," that is, until you tactfully explain that cookies should be baked on flat sheets of a size

to allow at least one inch clearance on each side for good circulation of heat.

Standard test procedure for measuring heat distribution in the oven, as I formerly pointed out, requires that four cakes be baked when located in certain specified positions. The Laboratories felt that it would be of general interest to determine the effect of changes in positions of cakes in the oven as well as the effect of baking less than the standard number of cakes.

Precision Needed

Results showed that baking pans must not touch each other nor should they touch the sides of the oven. Laboratories' test data indicated moreover that even moving the four layer cakes from the normal one-inch distance from the side walls to 0.5 inch caused heat distribution to change in such a manner that the bottom crusts of the cakes on the lower rack were considerably darker in color. Generally speaking, cakes were more uniform in color when placed nearer to the center of the oven than when located in the normal position or at a less than normal distance from the oven side-walls. Likewise, more uniform heat distribution was observed when baking two or three cakes than when the standard number of four was baked.

One question which seems to concern many home service persons is the effect of a preheating period versus a cold start when baking cakes. It was found that with a cold start a period of 30 minutes would produce cakes almost identical in color and texture to those baked in the normal manner for 27.5 minutes. In general those baked from a cold start were 2.4 percent lighter on the top and 1.7 percent darker on the bottom surfaces than those baked in a preheated oven. This difference is hardly apparent to the eye and can only be detected by means of the photoelectric reflectometer.

An incorrect choice of oven temperature for the product to be baked or an inaccurately-calibrated thermostat will very likely cause a baking failure. Baking failures which are due to too high or too low oven temperatures are easily recognized from a description of the product. If the temperature is too hot the cake browns quickly on top and the crust forms before full volume is attained. Consequently, the cake is heavy

and compact in texture. The top crust will be overly-browned and will be cracked. On the other hand if the oven temperature is too low the cake texture is likely to be coarse with a soggy layer at the bottom. The top surface will be sticky and pitted.

The Home Service Department of General Mills, Inc. calls particular attention to the need for accurate baking temperatures with the new method cakes, especially where the batters are thin. When the batter is thin and the temperature is not accurate (particularly not high enough) many of the ingredients tend to settle to the bottom of the cake. Accordingly failure results.

Occasionally you may receive a complaint that the bottom crusts of cakes baked in aluminum pans are too light in comparison to the top crusts although the correct oven temperature is used. Laboratories' tests have indicated that it is possible to decrease this difference in color between the top and bottom crusts of cakes by prolonging the baking period for a few minutes. This is for the reason that after approximately 20 minutes in the oven in aluminum pans the bottom crust of standard layer cakes tends to brown more rapidly than the top crust.

What Are You Going to Do About It?

Once the home service department has received a complaint call from a customer who has not obtained satisfactory baking results what procedure should be followed in handling it? In view of the fact that most complaints are due to faulty methods of the housewife the following plan of the Southern California Gas Company, Los Angeles, in handling

such calls seems to be a logical and intelligent approach to the problem:

- (1) A standardized cake recipe is used and all materials are provided by home service and taken to the woman's home where the cake is made and baked.
- (2) Standardized pans and other equipment made into a kit is also taken.
- (3) An appointment is made so that a serviceman either accompanies the home service representative or a thorough check of the range is made immediately preceding the baking job.
- (4) One-half of each of the two layers of cake is returned by the home service representative to the supervisor.
- (5) A report is made either that the customer is satisfied or that a recommendation should be made to the service department or to the manufacturer.

Occasionally when the housewife is not satisfied with baking standard cakes, the particular product causing the complaint is baked.

The Home Service Department of The Ohio Fuel Gas Co., Cleveland, follows a very similar plan in dealing with their baking complaints. They have found it time-saving to have the service man check the range in advance of the home service representative's call. Both companies report that the number of complaints which they have not been able to solve by these methods has been practically negligible.

Summarizing, the Laboratories' testing program may be depended upon to eliminate ranges with poor baking characteristics. Extensive research studies provided valuable information to help us better understand factors affecting baking results. It now rests with Home Service to utilize this information and pass it along to the housewife so that she can attain baking perfection with her new gas range.

GUIDING PROSPECTIVE HOME BUYERS

● The Institute of Life Insurance, backed by long experience of leading financing and real estate authorities, has drafted the following guide for the economic guidance of prospective home buyers. The rules are:

1. Don't buy a costlier home than you can afford. Total investments in a home should not be more than three times net annual income (income left after taxes). One-and-a-half to two times net annual income would be safer.

2. For most people the cost of upkeep—interest, mortgage reduction payments, taxes,

heating, insurance and a liberal estimate for maintenance and repairs—should not exceed about one-fourth of assured income.

3. Make as big a down payment as you can at the time of the purchase, and pay off the mortgage as rapidly as possible.

4. Buying a larger home than is needed increases expenses of maintenance and repair in direct proportion to the size.

5. A home should not be bought on any speculative notion that a profit can be made on the transaction, but rather for the pleasure, comfort and security of owning one's home.

Sulfur Resistant Catalysts

Laboratory measures activity of molybdenum preparations, nickel compounds and miscellaneous catalyst materials for gas-making or conversion processes

This paper is based on a report prepared by Dr. J. J. S. Sebastian and Dr. C. H. Riesz and summarizes experimental work performed by Lloyd McEwen, Pierre Lurie, Robert Husch and Frances Estes, Institute of Gas Technology, whose contribution is gratefully acknowledged.

The consultation, advice and guidance of E. J. Murphy, Dr. F. H. Dotterweich and L. Shnidman, members of the Technical Advisory Subcommittee to the A. G. A. Gas Production Research Committee, was extremely helpful in this work. This study was sponsored and financially supported by the Gas Production Research Committee of the American Gas Association.—The Author.

CATALYSTS have been developed in the past which have been very useful in promoting the reaction of hydrocarbons with steam, the water gas shift, the hydrogenation of carbon monoxide to methane and higher and similar reactions. These catalysts in general have been substances very readily poisoned by the action of relatively small amounts of hydrogen sulfide or of organic sulfur compounds present in the reaction mixtures. Since many of the common sources of gases suitable for these reactions are likely to contain sulfur compounds, this sulfur sensitivity either limits the use of the catalysts or imposes the necessity for purification of the raw materials. For these reasons, it was believed that the development for gas-making or conversion processes of catalysts resistant to poisoning by sulfur compounds would be highly desirable.

Of the many reactions for which such catalysts might be useful that of propane with steam to form carbon monoxide or dioxide and hydrogen seemed best adapted for laboratory study. The raw material is readily available in research quantities and high purity. Determination of the extent of the reaction is relatively simple. Moreover, the reaction is endothermic which simplifies tempera-

This paper presents the results of a laboratory survey made at the Institute of Gas Technology for A. G. A. Gas Production Research Committee Project Number CPR-7.

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ture control and the process is one which might find fairly wide application under suitable circumstances.

Accordingly, the experimental work described herein was confined to this reaction of propane with steam with the understanding that compounds which showed activity and a retention of at least a fair part of that activity in the presence of sulfur compounds would be investigated as catalysts for other reactions in this general class.

By definition a catalyst is a substance which does not enter into the final product of a reaction, but by virtue of its presence does increase the rate at which the reaction occurs.

At substantially constant times of contact in a flow system the activity can be determined by comparing the progress of the reaction in the absence of any catalyst with that obtained in the presence of the catalyst under test. In this particular case, because of the several primary and secondary reactions that may occur the extent of reaction is not readily determined by analysis of the effluent gas for unreacted feed stock or any single product, but the measurement of the increase in volume offers a means of making a fair approximation of the reaction.

This volume increase can be expressed as a fraction of the increase that would have been obtained if all the various possible reactions had reached equilibrium. The volume of products at equilibrium per volume of feed and the composition of the resultant gas can be calculated from available thermodynamic data.

It was assumed that under the selected experimental conditions there would be present in the equilibrium mixture no unreacted propane and no elemental car-

TABLE I
CALCULATED EQUILIBRIUM
COMPOSITION OF REACTION PRODUCTS

Moles of Gases per Mole of Propane Introduced:	1000° F.	1200° F.	1500° F.
H ₂ O	10.60	10.01	10.37
CO ₂	2.02	2.05	1.63
CO	.39	.90	1.37
H ₂	7.26	8.89	8.63
CH ₄	.59	.05	nil
Total moles without H ₂ O	10.26	11.89	11.63
Percent Composition on Wet Basis:			
H ₂ O	50.82	45.70	47.13
CO ₂	9.68	9.34	7.41
CO	1.88	4.12	6.23
H ₂	34.80	40.60	39.23
CH ₄	2.82	0.24	nil
Total	100.00	100.00	100.00
Percent Composition on Dry Basis:			
CO ₂	19.70	17.20	14.02
CO	3.82	7.59	11.78
H ₂	70.75	74.77	74.20
CH ₄	5.73	.44	nil
	100.00	100.00	100.00

bon. Earlier experimental work indicated that in the presence of a large excess of steam and at temperatures of 1200° F to 1500° F this assumption was valid. Table I shows the calculated compositions of equilibrium mixtures at various temperatures.

From Table I it may be seen that at equilibrium the volume of dry product gases per volume of propane will be 10.26 at 1000° F, 11.89 at 1200° F and 11.63 at 1500° F. From a practical standpoint no work was contemplated below 1200° F because at the times of contact to be employed only an extremely active catalyst would permit any appreciable reaction at these lower temperatures. Accordingly, the investigations were conducted at 1200° F and 1500° F using 15 volumes of steam per volume of propane and a space velocity of 250 cubic feet of gaseous propane per cubic foot of catalyst per hour.

The activity of the catalyst is expressed in terms of the ratio of the volume increase obtained to the volume increase at equilibrium at the operating temperature.

As several different supports were

used for the various catalysts it was necessary to determine the activity of the support alone and then correct the observed activity of the catalyst and support. None of the supports used showed any measurable activity at 1200° F but a few showed slight activity at 1500° F.

If for example a carrier that yielded two volumes of gas per volume of propane were used to support a catalyst which gave a total gas yield of ten volumes of gas per volume of propane at 1500° F then the activity would be expressed by

$$100 \times \frac{(10-1) - (2-1)}{11.63-1} = 100 \times \frac{8}{10.63} = 75 \text{ percent}$$

Figure 1 is an example of the method of plotting the expansion and the calculated activity, and shows the results obtained at 1500° F with catalyst number 43—nickel sulfide and chromium sulfide on alumina.

Operating Procedure

A flow diagram of the experimental apparatus is shown in Figure 2. Propane was fed through a flowmeter for rate control, then through a saturator and wet test meter to the steam generator. The steam required was produced by pumping a regulated amount of water from a calibrated reservoir into an electrically heated vaporizer. From this point the steam and propane flowed downward through the heated catalyst bed. The catalyst was contained in the central section of an alloy steel tube supported in a tube furnace whose heating element was divided into five individually controlled sections in order to facilitate maintenance of a uniform temperature down the tube. Temperatures were measured in the furnace and in the center section of the catalyst tube. The product gases were passed through a condenser to remove unreacted steam and the condensate was drawn off and measured. The gases were metered and sampled then passed to a vent.

Normally each catalyst was tested at 1200° F long enough to determine any unusual degree of activity at that temperature. If the expansion was low the temperature was raised to 1500° F, and

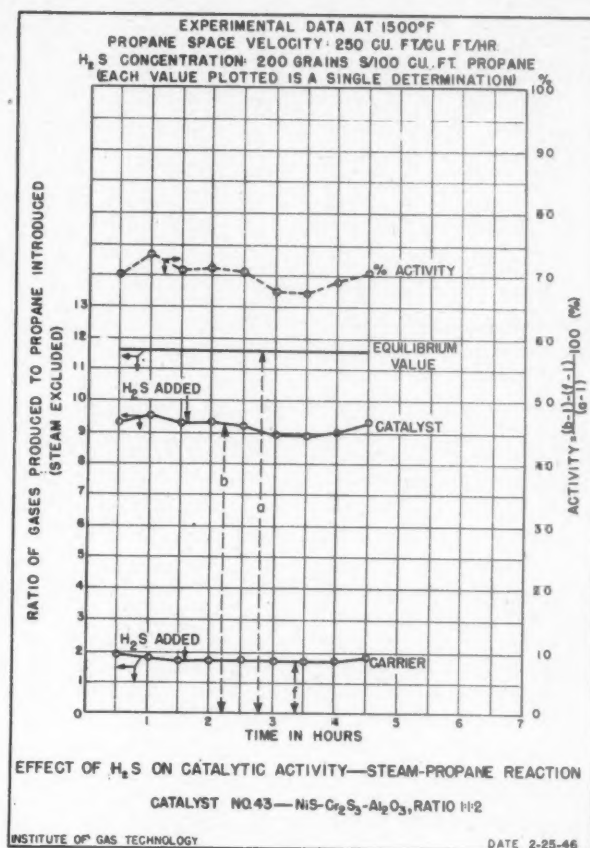


Figure 1

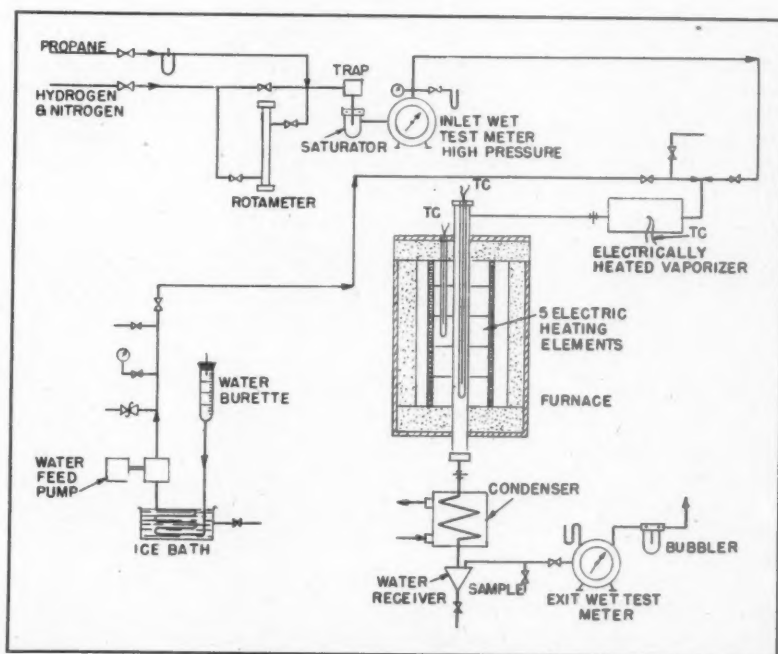


Figure 2. Catalyst Testing Unit

TABLE II
NICKEL SULFIDE CATALYSTS @ 1500° F.

Cat. No.	Nickel Sulfide		Activity Percent				Catalyst Disintegration	Carbon Deposition
	Description	Ratio	No	H ₂ S	H ₂ S	Present		
Ni470	NiS-Al ₂ O ₃ -SiO ₂	1:2.5:0.3	—	—	81	77	None	—
21	NiS-Al ₂ O ₃	1:2	—	82	—	76	Consid.	—
43	NiS-Cr ₂ S ₃ -Al ₂ O ₃	1:1:1.75	—	71	—	71	None	—
29	NiS-ThO ₂ -Al ₂ O ₃	1:0.18:2	—	65	—	67	None	—
34	NiS-ZrO ₂ -Al ₂ O ₃	1:0.09:2	—	63	—	60	Small	—
MoN.483	MoS ₂ -NiS-Al ₂ O ₃ -SiO ₂	1:1.8:11.8:1.3	—	53	—	57	None	—
N.471	NiS-Al ₂ O ₃ -SiO ₂	1:8.0:0.15	—	59	—	55	Sl.	—
48	NiS-ZrO ₂ -MgO-Al ₂ O ₃ -SiO ₂	6.6/2/3/1.7/1	—	46	—	49	Consid.	—
8	NiS-Al ₂ O ₃	1:3	—	46	—	39	None	—
42	NiS-FeS-Al ₂ O ₃	—	—	37	—	39	Mod.	—
45	NiS-CoS-Al ₂ O ₃	1:1:2	—	38	—	38	—	—
41	NiS-Al ₂ O ₃	1:1	—	31	—	35	—	—
1	NiS-SiO ₂	1:3	—	39	—	30	Sl.	—
4	NiS-SiO ₂	1:3	—	38	—	16	Consid.	—
49	NiS-FeS-MgO-Inf.Earth	1.8/1/1.7/1.9	—	14	—	14	—	—
9	NiS-Al ₂ O ₃	1:3	—	40	—	12	None	Sl.
3	NiMoS ₄ -SiO ₂	1:3	—	22	—	20	26 Large	Mod.
12	NiMoS ₄ -Al ₂ O ₃	1:3	—	53	—	13	13 Mod.	Mod.
27	NiMoS ₄ -SiO ₂	1:2	—	13	—	7	29 Consid.	—

after two to four hours' test hydrogen sulfide was added to the inlet propane (200 grains per 100 cubic feet) for a period of three hours, then the run was discontinued. The catalyst and tube were examined for evidences of catalyst disintegration and carbon deposition.

Catalysts that showed a good activity at 1200° F were tested for sulfur resistance at that temperature and no test was made at 1500° F.

Nickel Sulfide Contents

Table II summarizes results on 16 catalysts containing nickel sulfide. From an examination of Table II it may be seen that the two most active catalysts were 21, nickel sulfide on alumina in a mole ratio of 1:2 and Ni 470, a commercial preparation of nickel sulfide on alumina and silica in a ratio of 1:2.5:0.3. Very little difference was observed between these two in activity or sulfur resistance, but the commercial catalyst was apparently much stronger mechanically since substantially no disintegration was observed, whereas the catalyst prepared in the laboratory showed considerable disintegration.

Catalyst 41, nickel sulfide on alumina, prepared in the same manner as catalyst 21 but in a ratio of 1:1, gave much poorer results, and another commercial nickel sulfide on alumina silica (Ni 471) with a lower ratio of catalyst to support also gave lower results than Ni 470.

Attempts were made to promote the nickel sulfide-alumina catalyst with zirconium oxide and with thorium oxide (Numbers 34 and 29). In each case the

results were not as good as with the unpromoted catalyst. Catalyst 48 was another of this type with the addition of magnesium oxide to increase strength, but as shown by the disintegration index, this did not have the desired effect. Activity was not particularly high but resistance to sulfur was good.

The use of silica as a support for nickel sulfide does not seem desirable. Catalysts prepared by two methods (Numbers 1 and 4) in a ratio of 1:3 showed rather low activities and less resistance to hydrogen sulfide than most of the foregoing.

Catalysts 3 and 27 were prepared to test whether the combination of nickel and molybdenum in the form of nickel thio-molybdate would be an active catalyst for this reaction. Neither gave good results, catalyst 3 in a 1:3 ratio was poorer than 27 in a 1:2 ratio. As indicated above, silica was not a good carrier and the disintegration was excessive in the first case and fairly high in the second.

Of the other catalysts tested which combined nickel sulfide with other possible catalytic materials only one showed any promise. The mixture of nickel sul-

fide and chromium sulfide on alumina (Number 43) was almost as active as catalyst 21 and Ni 470 and did not appear to be affected by hydrogen sulfide. Combinations of nickel sulfide with molybdenum sulfide (Mo Ni 483) iron sulfide (Numbers 42 and 49) and cobalt sulfide (Number 45) all gave results appreciably poorer than the nickel sulfide alone, even though the resistance to hydrogen sulfide was uniformly high.

Nine catalysts were prepared in which nickel oxide was the main active component. The results are given in Table III.

Two of these, number 6—nickel oxide on silica (1:3) and number 26, nickel oxide on infusorial earth (1:3.5) showed high activity at 1200° F and were not tested at 1500° F. The activity in the presence of hydrogen sulfide dropped sharply in each case from 89 to 61.5 percent and from 86 to 47 percent respectively. Because of the nature of the supports it would be expected that some disintegration would occur if higher operating temperatures were used.

Of those tested at 1500° F, none of the nickel oxide catalysts showed as high activities in the presence of hydrogen sulfide as the better of the nickel sulfide catalysts.

Comparing the various preparations of nickel oxide there appears to be more variation than would normally be anticipated. For example the two mentioned as showing a high activity at 1200° F (numbers 6 and 26) would not be expected to be greatly different from number 11A (nickel oxide on alumina in about the same ratio) yet the activity of number 11A was only 64 percent at 1500° F.

Catalyst 31 (a thorium promoted nickel oxide on alumina) showed an activity of

TABLE III
OTHER NICKEL CATALYSTS @ 1500° F.

Cat. No.	Nickel Oxide		Activity Percent				Catalyst Disintegration	Carbon Deposition
	Description	Ratio	No	H ₂ S	H ₂ S	Present		
31	NiO-ThO ₂ -Al ₂ O ₃	1:0.15:2	—	92	—	56	None	—
11A	NiO-Al ₂ O ₃	1:3	—	64	—	52	None	Sl.
25	NiO-Al ₂ O ₃	1:2	—	57	—	51	Mod.	—
Snn766	NiO-MgO	1/94	—	67	—	21	Sl.	—
1543	NiO-Filtral	1/4.3	—	27	—	21	Sl.	—
1542	NiO-Filtral	1/8	—	29	—	19	None	—
Stanco410	NiO-Cr ₂ O ₃ -SiO ₂ -MgO	1/0.2/1.6/0.9	—	68	—	14	None	—
6	NiO-SiO ₂	1:3	89*	—	61.5*	—	None	None
26	NiO-MgO-Inf.Earth	1:0.7:3.5	86*	—	47*	—	Consid.	—
11-B	NiAl ₂ O ₄	1:3	—	77	—	25	None	Sl.
K	Ni-Al ₂ O ₃	1/3.3	94*	—	24*	—	None	—
Spaltung	NiCoS-Inf.Earth	1/0.53	100*	—	94*	—	None	—

* Tested @ 1200° F.

TABLE IV
MOLYBDENUM CATALYSTS @ 1500° F.

Cat. No.	Molybdenum Sulfides Description	Ratio	Activity Percent				Catalyst Disinte- gration	Carbon Deposi- tion
			No	H ₂ S	H ₂ S	Present		
Mo407	MoS ₃	—	71	—	63	—	Consid.	None
Mo469	MoS ₃ -Al ₂ O ₃ -SiO ₂	1/1.7/0.3	64	—	58	—	None	—
7	MoS ₃ -Al ₂ O ₃	1/3	7	—	7	—	None	—
2	MoS ₃ -SiO ₂	1/3	22	—	7	—	Mod.	Trace
Mo250	MoO ₃ -Al ₂ O ₃ -SiO ₂	1:5.3:0.6	33	—	23	—	None	—
Mo467	MoO ₃ -Al ₂ O ₃ -SiO ₂	1:12:1.2	24	—	12	—	None	—
Desulf.	(MoO ₃ .CoO).Al ₂ O ₃	1/6.1	23	—	15	—	Sl.	—
46	MoO ₃ .CoO. Al ₂ O ₃	1/2/6.6	20	—	10	—	None	—
10	MoO ₃ .Al ₂ O ₃	1/3	4	—	0	—	Consid.	—
5	MoO ₃ .SiO ₂	1/3	3	—	—	—	Mod.	—
13	Mo ₂ .Al ₂ O ₃	1/3	29	—	11	—	None	Sl.

92 percent in the absence of hydrogen sulfide compared to the 57 percent obtained with number 25, the same catalyst except that no thoria was added.

Two of the commercial preparations, Smn 766 and Stanco 410, showed moderate activity but very low resistance to hydrogen sulfide.

Also included in Table III are the results of tests made on two preparations of reduced nickel on alumina and a nickel carbonate catalyst used for methane cracking in Germany.

Catalyst 11B is number 11A reduced in a stream of hydrogen prior to use. The activity was fair although perhaps poorer than might be expected, but the resistance to sulfur poisoning was very low. It is interesting to contrast the activities of nickel sulfides prepared from the oxide and elemental sulfur such as number 21 in Table II (76 percent) and that prepared in situ by the reaction of metallic nickel and hydrogen sulfide such as number 11B (25 percent). Catalyst "K" (another preparation of reduced nickel oxide on commercial alumina) showed a very high activity at 1200° F and was not tested at 1500° F for that reason. Here again the addition of hydrogen sulfide reduced the activity to a marked degree.

Catalysts Containing Molybdenum

In Table IV are presented the results of tests of 11 preparations containing molybdenum as the tri- and disulfides, tri- and dioxides and reduced metal on various supports. Two commercial preparations of the tri-sulfide, Mo 407 (un-supported) and Mo 469 (supported on alumina silica) gave activities of 71 and 64 percent in the absence of hydrogen sulfide and of 63 and 58 percent in the presence of hydrogen sulfide, which values approach those of some of the better nickel sulfide catalysts. Unfortu-

nately these catalysts tended to yield elemental sulfur on heating and to disintegrate under conditions of use.

None of the other molybdenum preparations tests gave promising results.

Miscellaneous Materials

Five preparations of iron, five of chromium and one of cobalt are listed in Table V with the experimental results obtained in each case. These materials are presented only as a matter of record since none of the results were such as to invite further investigation. The highest activity was observed with number 17 (reduced iron on alumina) which was 37 percent with no H₂S and 29 percent in the presence of hydrogen sulfide.

In addition to those preparations for which experimental results are shown, there were tested oxides and sulfides of

tungsten, vanadium, columbium and tantalum. None of these showed any appreciable activity.

Summary

For convenience in comparing members of the various groups, those catalysts which show an activity of over 50 percent in the presence of hydrogen sulfide are listed again in Table VI in order of decreasing activity. Of the 12 in this group ten contained nickel, and of these seven contained nickel sulfide. The most active is the German "Spaltung" catalyst, but unfortunately the low mechanical strength of this preparation and the low thermal stability of nickel carbonate make it unsuitable for industrial use. Attempts to duplicate this catalyst in the laboratory have not been successful. The next four in order of activity are preparations of nickel sulfide which show quite consistently good results. However the use of thoria as a promoter in number 29 or the admixture of chromium sulfide in number 43 did not appear to effect any improvement over the nickel sulfide alone in Ni 470 or number 21.

It may be however, that the fact that catalyst 43 was not affected by the presence of hydrogen sulfide in three hours would indicate (Continued on page 232)

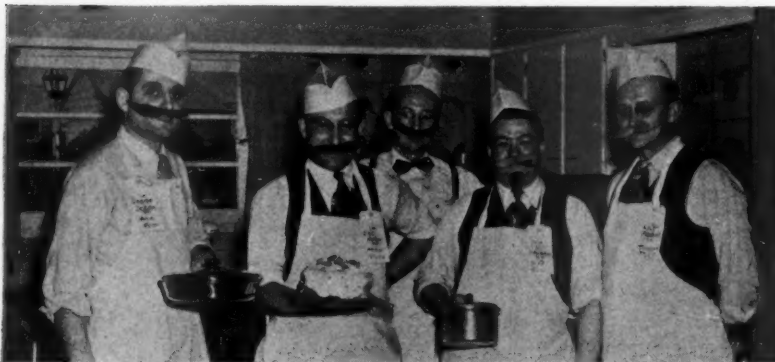
TABLE V
MISCELLANEOUS CATALYSTS @ 1500° F.

Cat. No.	Iron Sulfide Description	Ratio	Activity Percent				Catalyst Disinte- gration	Carbon Deposi- tion
			No	H ₂ S	H ₂ S	Present		
16	FeS.Al ₂ O ₃	1:3	—	33	—	29	Mod.	—
36	FeS.Al ₂ O ₃	1:2	—	20	—	19	Consid.	—
15	Fe ₂ O ₃ .Al ₂ O ₃	—	—	26	—	18	—	Sl.
Fe367	Fe ₂ O ₃	—	—	13	—	15	None	—
17	Fe-Al ₂ O ₃	—	—	37	—	29	None	—
20	Cr ₂ O ₃ .Al ₂ O ₃	1:3	—	30	—	23	None	—
19	Cr ₂ O ₃ .Al ₂ O ₃	1:3	—	32	—	19	None	—
Cr52	Cr ₂ O ₃ .Al ₂ O ₃	1:6	—	11	—	11	None	—
Cr183	Cr ₂ O ₃ .Al ₂ O ₃	1:10.9	—	26	—	13	Sl.	—
Cr473	Cr ₂ O ₃ .Al ₂ O ₃ -SiO ₂	1:10.3:1	—	18	—	11	None	—
28	CoS.Al ₂ O ₃	1:3	—	27	—	22	Sl.	—

TABLE VI
TWELVE MOST ACTIVE CATALYSTS

Catalyst Number	Description	Activity Percent				
		No	H ₂ S	H ₂ S	Present	
Spaltung	NiCo ₃ .Inf.Earth	100	—	94	—	1200° F.
6	NiO.SiO ₂	89	—	61.5	—	1200° F.
Ni470	NiS-Al ₂ O ₃ -SiO ₂	81	—	77	—	
21	NiS-Al ₂ O ₃	82	—	76	—	
43	NiS-Cr ₂ S ₃ .Al ₂ O ₃	71	—	71	—	
29	NiS.ThO ₂ .Al ₂ O ₃	65	—	67	—	
Mo407	MoS ₃	71	—	63	—	
34	NiS-ZrO ₂ .Al ₂ O ₃	63	—	60	—	
Mo469	MoS ₃ -Al ₂ O ₃ -SiO ₂	64	—	58	—	
MoNi483	NiS.MoS ₃ .Al ₂ O ₃ -SiO ₂	63	—	57	—	
31	NiO.ThO ₂ .Al ₂ O ₃	92	—	56	—	
Ni471	NiS.Al ₂ O ₃ -SiO ₂	59	—	55	—	

Pittsburgh Dealers Praise Cooking School



Three salesmen from prominent Pittsburgh store, John Frazier, Equitable Gas Co. (center), and Arthur Probst, Tappan Store Co. (far right) sporting chef's attire and removable mustachios at dealers' cooking school

GAS range dealers in the Pittsburgh area are learning by first-hand experience the advantages of cooking with gas. At a special training school conducted by the Sales Promotion Division of the Equitable Gas Co., the dealers are invited in groups of about 15 each to come in and prove to themselves that gas cookery is really superior.

A typical class starts at 7:30 in the evening in Equitable Home Service Auditorium. Kathryn L. Barnes, home service director, points out the features of modern gas ranges, discusses utensils, cooking methods and the menu for the evening.

Three different prominent makes of gas ranges are used for the actual cooking and four other well-known ranges are displayed in the auditorium. Ranges are rotated from time to time so that equipment of different manufacturers will be displayed and used.

After cooking, each dealer serves his food on individual dinner plates. Before this is done, however, he selects an appropriate mustache from a collection provided and

has his photograph taken by the publicity supervisor. About a week later, a dealer representative delivers the picture enclosed in an attractive folder which proclaims "The World's Foremost Chefs Cook with Gas."

Later in the evening a skit is put on by two home service girls to depict a typical customer home call following a dealer's new range installation. Following further discussion of gas company services available to dealers, a well-known local magician accompanies a clever array of magic tricks with appropriate banter about the advantages of gas for cooking.

To date 250 dealers have registered for the school, each session of which runs about two and one-half hours. At the conclusion of the class, each dealer is presented with an attractive leather wallet, containing a handy scratch pad and a two-month calendar.

The training classes have proved a boon to dealer relations and have brought dealer and gas company together in a friendly bond of cooperative effort to promote gas range sales in the teeth of widespread local promotional activities by power companies and electric manufacturers.



Teachers at Equitable Gas Company's training school for gas range salesmen are, left to right: Mary Fleming, Charlie Vogeley, Lois Dinneen, Dave McKay, Kathryn Barnes, home service director, and John Frazier, dealer relations supervisor

Excessive Moisture Problem Attacked

UNIVERSITY of Illinois Small Homes Council has issued circular F6.2 entitled "Moisture Condensation." The material contained in the circular was prepared by Professor Frank B. Rowley, director, University of Minnesota Engineering Experiment Station.

It is pointed out that inside moisture builds up from outside air that infiltrates through the walls and around windows or from household activities. To overcome the former, vapor barriers built into the wall construction or suitable paint applied inside existing houses are recommended.

Sources of water vapor within the home are given as the human body, bathing facilities, cooking processes, laundry, open gas flames, humidifiers. Suggestions are made for removing such moisture before its concentration becomes so great as to cause condensation on walls, ceilings, floors and windows. Condensation is more likely to occur in the small modern houses than in the larger houses built to earlier standards.

The importance of this problem to the gas industry was recognized by the American Gas Association Committee on Domestic Gas Research. Through the A. G. A. Technical Advisory Group for Gas Cooking Research, a project has been assigned to Purdue Research Foundation to study quantitatively the creation of moisture from every use to which gas is put in the home. Suitable methods of control are also a part of the project. Leon Ourusoff, Washington Gas Light Co., a member of the Technical Advisory Group, is acting as sponsor for this project on behalf of the Group. A great amount of data has been collected and Mr. Ourusoff expects that the first report to the industry will be ready this summer.

Use of Natural Gas Expansion Turbines Increasing

NATURAL gas expansion turbine engines are rapidly replacing reciprocating engines in gas and oil fields, the American Society of Mechanical Engineers in Tulsa, Okla., was told by Stephen Benzec of the Elliott Company, Jeanette, Pa., manufacturer of gas turbines.

This type of expansion turbine should not be confused with the relatively new gas turbine engine. The gas-expansion type is driven by gas in the same way that steam drives steam turbines. The gas used to drive the turbine is not burned in the process and after discharge from the engine can be used for any of the purposes for which it was originally suitable.

Gas turbine engines on the other hand are powered by gases created by combustion from liquid or gaseous fuels. The exhaust gases have no subsequent value.

The increasing use of the natural gas turbine engine in oil and gas fields, to drive pumps, generators, fans and other equipment, is due to its economy and efficiency.

Gas Cost Ratio Improved by Revised Fuel Data for New Veterans' Hospitals

GAS gained considerable ground in the competitive fuel battle last month when new revised bases were announced for estimating unit fuel costs for cooking in new veterans' hospitals.

Unit data issued April 10, 1947 by the Utilities Section, U. S. Army Corps of Engineers, reduces gas consumption from nine cubic feet of natural gas per ration (one whole day's meals) to 5.5 cubic feet and from 15 cubic feet of manufactured gas to ten cubic feet. Electric consumption was reduced from 1.0 kwh to 0.98 kwh per ration.

The revised figures were based on field studies of actual use of fuel for cooking in

many existing Veterans' Hospitals. They are, therefore, the most reliable comparative data currently available for commercial cooking proposals.

The revised material also includes information on electric consumption and demands for power and light as well as increment demands for cooking appliances. Copies of the complete story have been sent to the delegates of A. G. A. member companies in whose territory new Veterans' Hospitals are projected. Extra copies of this material (Memorandum No. 4, superseding previous memos) are available on request.

National Magazine Publicity Increases

PUBLICITY on domestic gas appliances has been consistently favorable during the past two months. Stories in the national magazines have featured picture layouts in both black and white and color with supplementary factual explanations and specifications of ranges, refrigerators, water and house heaters and all-gas kitchens.

The April issue of *Practical Home Economics*, in a refrigerator feature, pictured and

described the new gas refrigerator. Another illustrated two-page feature told the story of gas equipment for small lunchrooms and included a household range, a heavy-duty range, separate broilers, deck-type bake ovens and a large-volume pressure cooker.

Good Housekeeping magazine in two succeeding feature stories called "Know Your Range, the Top of It" in April, and "Know Your Range, The Oven" in May, gave a de-

tailed picture story of both top burner and oven features, clock control, heat regulators and the best methods of cleaning the oven.

Family Circle's two-page April story was called "What's New in Gas Ranges" with color layout of pictures and top-of-the-range burner formats in chart form.

Six pages in the April issue of *Better Foods* were devoted to a complete story "Modern Gas Stoves" and described the salient features of each model. The same issue, in a recipe story, pictured gas range top burner views.

Two engineer editors of *Better Homes and Gardens* wrote for its April issue a two-and-a-half page feature story called "New Heating Plants Go Anywhere" with careful and detailed explanation of heat controls, type burners, style and radiation direction.

In a three-page Home Feature picture story in the May issue of *House Beautiful*, the editors described the all gas kitchens.

Parents' Magazine, the May edition, carried a hard water story and used illustrations of gas-fired water heaters.

A two-page refrigerator story in the May issue of *Woman's Home Companion* illustrating the new refrigerators with open-door views included *Servel*. The same publication, in a recipe feature, pictured gas range burner and oven views.

In a money-saving food story, *Ladies' Home Journal* in its May issue, used a new gas range for illustration.

This review of only a part of the publicity on gas which has appeared in increasing good feature stories is most encouraging. Headquarters Publicity will report further on gas publicity in succeeding issues of the A. G. A. MONTHLY.

A. G. A. Constitutional Amendments Approved by Membership

THREE amendments to the Constitution and By-Laws of the American Gas Association have been approved by the membership by an almost unanimous mail vote. The effect of the amendments is:

(A) To enlarge the membership of the Executive Board in order to make it more representative of the present membership of the Association and to include, as a member of the Executive Board, the Chairman of the Laboratories Managing Committee because of the importance of the work of the Laboratories.

(B) To provide an Executive Committee to act for the Executive Board between meetings, which is in line with accepted corporate practice and would provide greater expediency and flexibility in the conduct of the Association activities.

(C) To make possible a more practical method of approving and paying bills.

As a result of the adoption of these amendments, the membership of the Executive Board of the Association will be increased by the election at the 1947 Convention by four members. The Chairman of the Laboratories' Managing Committee also will become a member of the Executive Board. The Board will exercise its newly-acquired powers to designate an Executive Committee and approve a more practical method of handling the payment of bills.

A copy of the revised Constitution and By-Laws will be sent members on request as soon as printed.

"The Flame of Freedom"



Helen and husband Bert study the latest gas appliances for the modern kitchen in "The Flame of Freedom"

THE Flame of Freedom," a 17-minute sound-slide film putting across the idea of new freedom in the kitchen through the use of gas, is being released to the industry this month by the New Freedom Gas Kitchen Bureau of the American Gas Association, and the Gas Appliance Manufacturers Association.

The film contains 101 color pictures showing the New Freedom Gas Kitchen and has a story and running commentary built around each of the major appliances. It is produced in full-color by Wilding Pictures Production, Inc., and has a professional cast.

Gas Utilities Urged To Increase Depleted Coal Supplies as Rapidly as Possible

GAS utilities distributing manufactured and mixed gas have been strongly advised by J. A. Krug, Solid Fuels Administrator, to build up fuel stocks as rapidly as possible to at least a 60 days' supply. Mr. Krug asked the cooperation of the gas industry on April 19 in a letter to H. Carl Wolf, managing director, American Gas Association.

An Association survey of gas utility fuel stocks completed early in April indicates that a large proportion of the industry is closing the current heating season with badly depleted inventories. This is an alarming situation in view of the possibilities inherent in the cessation of government operation of bituminous coal mines, scheduled for June 30. Non-utility stockpiles are probably in an even

worse position than those of the utility industry, consequently the demand for coal in the next two months may be tremendous.

It may be necessary to purchase and store any useable grade and kind of fuel if uninterrupted utility service is to be assured in the event of an extended summer curtailment of mining.

Some indication of the extent to which the fuel position of gas utilities has deteriorated in the space of one year, principally as the result of three serious mining stoppages, is shown by the following comparison of partial data from two of the surveys undertaken by the Association at the beginning of such stoppages:

April 6, 1947			April 1, 1946	
Days supply of coal on hand and in transit	Number of utilities reporting	Number of customers represented by reporting companies	Number of utilities reporting	Number of customers represented by reporting companies
Under 61	116	6,294,000	110	4,033,000
Under 46	100	6,111,000	80	3,175,000
Under 31	71	4,361,000	45	1,662,000
Under 16	21	743,000	9	59,000

A. G. A. Southwest Personnel Group Meets

THE American Gas Association Southwest Personnel Conference held a definitely successful session at the Hotel Buena Vista in Biloxi, Mississippi, April 16, the day before the Southern Gas Association Annual Convention. V. H. Luneborg, personnel manager, Arkansas Natural Gas Corp., Shreveport, La., was elected secretary of the conference to succeed R. S. Collings who resigned.

A comprehensive review of pending Federal and state industrial relations legislation was presented by A. J. Sarre, director of industrial relations, New Orleans Association of Commerce. National developments in personnel matters, particularly as they af-

fect gas utilities, were reviewed by Kurwin R. Boyes, secretary, American Gas Association.

As customary, most of the session was devoted to the reporting and discussion of specific company personnel activities since the last meeting of the group. Under the skillful guidance of the chairman, W. H. Senyard, director of personnel, Louisiana Power and Light Co., the discussion was particularly informative.

The conference unanimously accepted the invitation of W. A. McDonald, treasurer, Memphis Natural Gas Co., to hold its next meeting at the Hotel Peabody, Memphis, Tennessee, on June 11. All gas company personnel executives are welcome at A. G. A. Southwest Personnel Conference meetings.



A. G. A. Southwest Personnel Conference delegates take momentary time-off from discussion at Hotel Buena Vista in Biloxi, Miss., April 16

Convention Calendar

MAY

- Apr. 30-May 1** • A. G. A. Natural Gas Department Spring Meeting, Hotel Stevens, Chicago.
- 6-7** • International Gas Union, Brussels, Belgium.
- 5-9** • A. G. A. Industrial Gas School, Hotel Seneca, Columbus, Ohio.
- 6-8** • Southwestern Gas Measurement Short Course, University of Oklahoma, Norman, Okla.
- 8** • Mid-West Personnel Conference, Phillips Hotel, Kansas City, Mo.
- 12-16** • A. G. A. Commercial Gas School, Washington, D. C.
- 15-16** • Indiana Gas Association, French Lick Springs Hotel, French Lick, Indiana
- 20-22** • Pennsylvania Gas Association, Wernersville, Pa.
- 22-23** • Canadian Natural Gas and Petroleum Association, Royal Connaught, Hamilton, Ontario.
- 26-29** • National Fire Protection Association, Palmer House, Chicago.
- 27-29** • Liquefied Petroleum Gas Association, Hotel Sherman, Chicago.

JUNE

- 2-4** • A. G. A. Joint Production and Chemical Committee Conference, Hotel New Yorker, N. Y.
- 2-5** • Edison Electric Institute Annual Convention, Atlantic City, N. J.
- 3-6** • The Institution of Gas Engineers, Annual Meeting, Birmingham, England.
- 9-11** • Canadian Gas Association, General Brock Hotel, Niagara Falls, Ontario.
- 16-19** • American Society of Mechanical Engineers, Semi-Annual Meeting, Chicago.
- 23-24** • A. G. A., N. Y.-N. J. Sales Conference, Essex and Sussex Hotel, Spring Lake, N. J.

JULY

- 7-8** • Michigan Gas Association, Grand Hotel, Mackinac Island, Mich.

SEPTEMBER

- 1-4** • American Society of Mechanical Engineers, Fall Meeting, Salt Lake City, Utah.
- 23-25** • Pacific Coast Gas Association, Hotel Del Coronado, San Diego, Calif.

OCTOBER

- 6-8** • A. G. A. Annual Convention, Cleveland, Ohio.
- 20-24** • National Metal Congress and Exposition, Amphitheater, Chicago (A. G. A. will exhibit).
- 21-23** • American Standards Association, Waldorf-Astoria Hotel, N. Y.

NOVEMBER

- 10-14** • National Hotel Exposition, Grand Central Palace, N. Y. (A. G. A. will exhibit).

DECEMBER

- 1-5** • American Society of Mechanical Engineers, Annual Meeting.

Accounting Section

LEITH V. WATKINS, Chairman

JOHN A. WILLIAMS, Vice-Chairman

WALTER E. CAINE, Secretary

Accounting Conference Acclaimed



Accounting conference co-chairmen Leith V. Watkins, A. G. A. and H. P. Taylor, E. E. I.

Accounting problems of the nation's gas and electric utilities were searchingly analyzed and vital trends uncovered at the 1947 National Accounting Conference jointly sponsored by the American Gas Association and the Edison Electric Institute at the Hotel Statler in Buffalo, April 7-9. The many-faceted program provided nearly 700 delegates from the United States and Canada, largest registration in the history of the conferences, with the latest information in the accounting field and suggested ways to increase the present cooperation between utility accountants and management.

Smoothly running proceedings were ably directed by A. G. A. Accounting Section Chairman Leith V. Watkins, Panhandle Eastern Pipe Line Co., New York, and E. E. I. Accounting Division Chairman, H. P. Taylor, Wisconsin Public Service Corp., Milwaukee. The general consensus at the close of the sessions was that the conference was one of the most progressive and informative yet held.

Framework of the program was built around the general sessions on Monday afternoon and five morning and afternoon meetings of the General Accounting Activities and Customer Activities Groups. A large dinner was held in the Statler ballroom on Tuesday evening with H. Carl Wolf, A. G. A. managing director, H. S. Bennion, E. E. I. vice-president and managing director, and O. F. Flumerfelt, president, Iroquois Gas Corp., Buffalo, as guests of honor. Committee meetings, reports and panel discussions completed the well-rounded program.

Opening the general sessions, Mr. Taylor emphasized the importance of helping to solve accounting problems through informal discussion. Luncheon meetings and other parts of the conference program, he said, were particularly designed with this thought in mind.

Following a cordial welcome by A. T. O'Neill, president, Buffalo Niagara Electric Corp., the delegates heard an attention-holding talk on "America's Economic Outlook." Murray Shields, vice-president, Bank of the Manhattan Co., a nationally known financial and economic expert, vigorously discussed economic guideposts for business planning.

"The economic danger signals are coming up," he stated, "and they call for caution in financial and inventory policies. But we have the green light for the period after the readjustments in prices have been made, and this is no time to burn the blueprints for increasing efficiency and expanding capacity to supply the great and growing demands of our economy."

Included among the danger signals he listed were oversized inventories, lack of enthusiasm among stock market investors, decreased consumer spending power in real

estate and lower purchasing power of factory and fixed income workers.

These signals do not necessarily mean a serious depression, the speaker explained, but that at least a period of difficult economic readjustment is in the offing.

Once this readjustment period is passed, Mr. Shields added, America should be ready for "a period of productive activity far surpassing that of the 30's." He said that the technological progress of the past few years will be a dynamic force largely responsible for that future economic expansion and prosperity.

Merle Hale, director of salaried personnel activities, General Motors Corp., was the next speaker and presented some interesting suggestions for increasing the employee relations of office workers, a field in which he has a wide background.

Need Understanding

It is absolutely necessary, he said, for management to understand the employee, his viewpoint and motivations. There are three pillars of good employee relations which are vitally important to the success of any business: treat your employees fairly, pay them fairly and fill each position with an employee qualified physically, mentally and temperamentally for the job.

To do a thorough job in the employee relations field, Mr. Hale suggested that management sponsor periodic salary surveys, analyses of salary adjustments and an inventory of personnel comparable to forecasts of plant requirements.

"We must find better ways of bringing home to employees the fact that labor-man-



Murray Shields



Edward R. Eberle



James V. Toner



Merle Hale



A. T. O'Neill



Left to right: H. D. Borger, Pittsburgh, and H. B. Hardwick, New York, co-chairmen, General Accounting meeting; Wallace Carr, Buffalo; J. H. W. Roper, Washington; L. E. Nash, Chicago



Left to right: R. F. McGlone, Cleveland and W. E. Sturm, Pittsburgh, co-chairmen, Customers Activities Group meeting inspect "Wrinkles" exhibit following Customer Activities Luncheon; A. A. Cullman, New York; A. M. Hartogensis, New York; A. W. Fyfe, New York

agement relationship is a two-way street," Mr. Hale remarked. "A company's best asset is a good employee. We must make the employee realize that his best asset is a good job with a sound company."

The theme of improving employee relations was carried a step further by Edward R. Eberle, Public Service Electric and Gas Co., Newark, N. J., who advised more careful selection and training of competent supervisors. The entire future success of company relations may depend upon supervisory training, he added. A report outlining elements of supervisory training methods and the results of a questionnaire sent to 95 member companies represented on the A. G. A. Accounting Section and E. E. I. Accounting Division committees, was circulated at the meeting and discussed in detail by Mr. Eberle.

Turning from important but more general subjects, James V. Toner, president, Boston Consolidated Edison Co., urged the delegates to further the realization that utility accounting will be one of the most important aids to management in the readjustment period ahead. He said that the business accountant can and should be the right hand advisor of management.

"Too little emphasis is being placed upon showing the efficiency of business. The accountant's knowledge of these figures should be broken down, presented and interpreted so as to reveal for management the soundness or unsoundness of policy and act as a basis for future planning."

In this way, Mr. Toner said, the utility accountant will become "an instrument for increased efficiency and economy of operation

—a source of income rather than an expense."

H. D. Borger, The Peoples Natural Gas Co., Pittsburgh, and H. B. Hardwick, The Commonwealth and Southern Corp., New York, presided at the General Accounting Activities Group meetings and R. F. McGlone, The East Ohio Gas Co., Cleveland, and W. E. Sturm, West Penn Power Co., Pittsburgh, presided at the Customer Activities Group meetings.

The major portion of the morning general accounting session on April 8 was devoted to summarized reports of committee activities. A. W. Hastings, Epsco, Inc., New York, reported that his committee has determined that depreciation is a management problem, "not a job for a so-called expert off in the corner."

"If you will but look you will see the handwriting on the wall," he said, "spelling out plainly that all utilities are going to find it necessary to know more about depreciation in the future."

A. M. Hartogensis, Ebasco Services Inc., New York, reported on recent developments in the uniform classification of accounts, mentioning points needing further clarification and stressing the difference between capital and expense accounts.

B. S. Rodey, Jr., Consolidated Edison Company of New York, Inc., declared that the topic of his report, "Destruction and Preservation of Records," could well be changed to "The Orderly Destruction of Records" as the accumulation of useless records in huge volume is a serious problem facing utility accountants. Every utility should have

a detailed record retention schedule, he said, and should classify records to indicate how long each will be kept.

On the same subject, Ralph E. White, assistant manager, Photograph Records Division, Remington Rand, Inc., outlined the advantages of micro-filming in the selection and preservation of important records.

Paul Grady, senior partner, Price Waterhouse & Co., was the next speaker and held the rapt attention of his audience with a discussion of future trends in utility accounting and financing.

The principal purpose of utility accountants, he said, is to supply information to management and to help develop the executives' understanding of such vital matters as budgeting. In other words, "a primary purpose of accounting is stewardship reporting."

Discussing a current trend in some sections of the private utility field toward government ownership and operation, Mr. Grady appealed for a strong fight against "direct and indirect tax subsidies of government-owned business."

Not only the utilities but all business should support the fight against special privileges and preferences offered to public power, he said.

Other subjects reported on at the morning sessions were: Plant Accounting and Records—A. J. Mayotte, Consumers Power Co., Jackson, Mich.; Application of Accounting Principles—H. H. Scaff, Ebasco Services Inc., in the absence of R. P. Kaesshafer, American Water Works and Electric Co., Inc., New York City, and Standard Arrangement of Provisions in Mortgage Indentures—R. N. Benjamin, Epsco, Inc., New York City.



G. B. Herr

C. H. Mann

The afternoon general accounting meeting was devoted to reports by joint subcommittees, followed on April 9 by discussion of these reports and other topics in open meetings. The committees reporting and their co-chairmen were as follows:

Machine Applications for General Accounting—J. B. Farley, New York State Electric and Gas Corp., Ithaca, and C. J. Wardell, The Commonwealth & Southern Corp., New York; Budgets—W. H. Zimmer, The Cincinnati Gas and Electric Co., and A. A. Cullman, Columbia Engineering Corp., New York; Internal Auditing—H. C. Johnson, Consolidated Natural Gas Co., New York, and C. T.

Atkinson, Ebasco Services Inc., New York; Functional or Responsibility Accounting—J. E. Jackson, The Cleveland Electric Illuminating Co., and A. T. Gardner, Delaware Power and Light Co., Wilmington, and Licensed Projects Accounting and Reporting—H. W. Boozer, Georgia Power Co., Atlanta.

Among the highlights of these open meetings was the discussion of functional accounting classification used by four different utility companies. O. K. Boyd, Consolidated Gas Electric Light and Power Co. of Baltimore, described budget procedure employed by his company which emphasizes activities rather than responsibilities.

The system used by The Detroit Edison Co. was outlined by Louis Provencher, and for the Philadelphia Electric Co. by W. C. Smith, pinch-hitting for G. V. Buck, Jr., of the same company. The final outline was provided by F. J. Labanca, New Orleans Public Service Inc.

Three papers engaged the attention of those at the internal auditing meeting. J. M. Trant, Consolidated Natural Gas Co., Pittsburgh, discussed "An Internal Auditing Program of an Integrated Natural Gas System" and at the same meeting C. J. Nichols, Consolidated Gas Electric Light and Power Co. of Baltimore, discussed Internal Auditing Practice in his company. Winding up the meeting of the committee on April 9 C. G. Nye, Consolidated Edison Co. of New York, Inc., delivered a talk on the organization and practice of the auditing department in his utility.

As opening speaker on the Customer Activities Group program on April 8, C. E. Rowe, Consumers Power Co., Jackson, Mich., examined collection practices and policies. He advised utility collection department heads to ask themselves:

"Are we on a firm foundation now? Do we have a policy that is consistent with good customer relations and yet sound in obtaining

collections with sufficient promptness? Does our practice indicate a well-thought-out pattern for customers with a previously good paying record whose accounts become overdue, as well as for those with a poor record? Are we exerting sufficient effort where it is needed, and being lenient where warranted?"

Customer Attitudes

The report of F. J. Porter, Jr., Consolidated Edison Company of New York, Inc., gave some valuable pointers on reflecting customer attitudes to top management and described the results of a questionnaire forwarded to 47 gas, electric and combination companies active in the A. G. A. and E. E. I. Customer Activities Sections, a sample thought to be "sufficiently inclusive to reflect the general practice of the industry in reporting customer attitude."

"It is believed," the report stated, "that top policy-making executives, who are anxious to know what people think about their policies and practices, will consider tapping every source of information on customer attitudes available within the company."

"The responsibility for collecting and utilizing the information gained should be centralized in a person or group representing all contact units of the organization. These responsibilities should include:

"Establishing standards and procedures for the collection of information; summarizing the information, evaluating the reasons for changes in customer attitude; distributing the information to all interested, including not only policy-making executives but all supervision whose activities may in some manner influence customer attitude; recommending changes in policies and practices based on such summarized and evaluated information."

Other features of the morning session included highlights of the "Wrinkles" report,

an interim report on meter reading by W. R. Seidel, Rochester Gas and Electric Corp., and a panel discussion of accounting records and files, led by L. J. Rauh, Consolidated Gas Electric Light and Power Company of Baltimore.

The final Customer Activities morning session on April 9 opened with the reading by H. C. Smith, The Peoples Gas Light and Coke Co., Chicago, of a valuable paper by C. L. Sullivan, The Peoples Gas Light & Coke Co., Chicago, entitled, "Write as You Talk—Customers Like It."

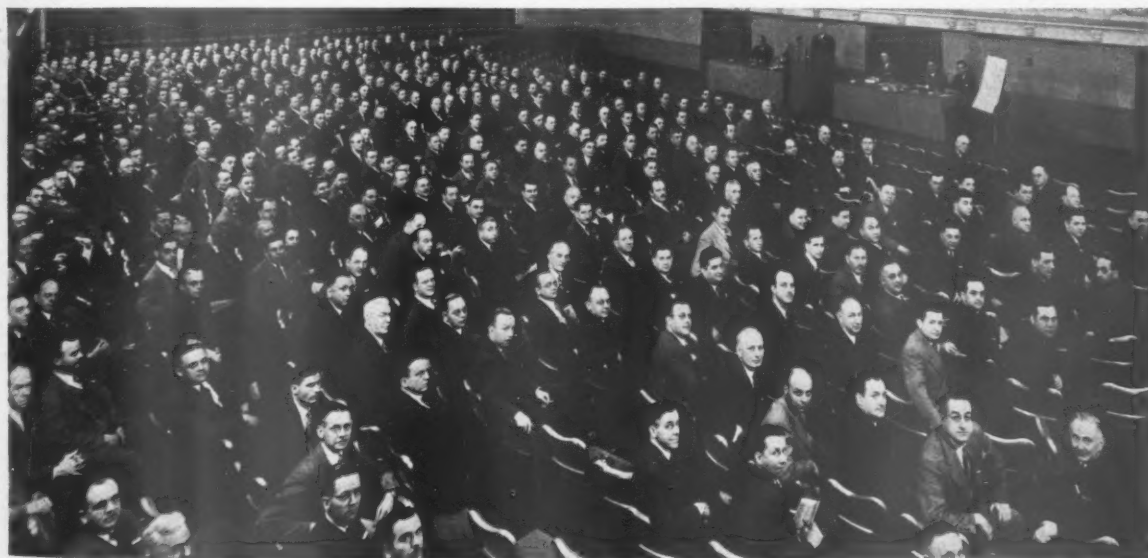
C. L. Havener, Consolidated Edison Company of New York, Inc., stated that "the value of the credit and collection department to the company and the industry lies in obtaining prompt payment for service rendered and at the same time maintaining customer goodwill without excessive operating costs."

"The major credit and collection operations can be divided into four groups," he said. "Credit on applications for service; collection of active accounts; collection of final accounts and appliance credit and collections."

A talk on developments in office devices and equipment by J. H. W. Roper, Washington Gas Light Co., Washington, D. C., and a demonstration of magnetic recording devices by C. L. Titus, general manager, and J. S. Kemp, engineering advisor, Magnetic Recorder Division, Armour Research Foundation of Illinois, brought the Customer Activities meetings to a close.

The three-day meeting of the A. G. A. Materials and Supplies Committee was attended by 14 of the 17 committee members and numerous guests. G. B. Herr, The Peoples Natural Gas Co., presided over an interesting program. Subjects covered and the speakers were as follows:

Purchasing operations—H. G. Lawrence, Southern Counties Gas Co., Los Angeles;



General Sessions of the National Accounting Conference jointly sponsored by the E.E.I. and A. G. A. in Buffalo, April 7-9 nearly filled the Hotel Statler Ballroom

Salvage—O. G. Peterson, New York State Electric and Gas Corp., Ithaca; Report of Stores Operations Subcommittee, L. G. Wiseley, Michigan Consolidated Gas Co., Detroit; Report of Standard Packaging Subcommittee—L. R. Michelsen, The Peoples Gas Light and Coke Co., Chicago; Stores Equipment and Building—paper prepared by A. A. Charonnat, Pacific Gas and Electric Co., read by R. I. Highgate, Memphis Light, Gas & Water Division; Purchasing and Stores Accounting—D. M. Baker, The East Ohio Gas Co., Cleveland.

The joint Taxation Accounting meetings were directed by W. S. Alt, Union Electric Company of Missouri, St. Louis, and C. H. Mann, Columbia Engineering Corp., New York. The principal speaker was Thomas N. Tarleau of the firm, Willkie, Owen, Otis, Farr and Gallagher, and one time tax legislative counsel for the U. S. Treasury Department, who by analysis of Federal budget needs outlined possible changes in tax-imposing statutes.

Plant Accounting

The Plant Accounting meetings under the co-chairmanship of A. J. Mayotte, Consumers Power Co., Jackson, Mich., and L. E. Nash, Middle West Service Co., Chicago, opened with the reading by E. D. King, The Detroit Edison Co., of a paper on accounting for salvaged equipment and major spare parts items. Next item on the agenda was the reading by Mr. Mayotte of a paper issued by the Pennsylvania Electric Association on "Coordination of Continuing Property Records, General Accounting, Operations, and Engineering Activities." W. G. Pilgrim, The Peoples Gas Light and Coke Co., Chicago, concluded the afternoon session by reading a paper on "Methods of Pricing Retirements from Mass Property Accounts."

A morning session on April 9 opened with G. H. Eilers, The Cincinnati Gas and Electric Co., reading a paper on streamlined continuing property records previously delivered by H. B. Hardwick, The Commonwealth and Southern Corp., at a Southeastern Electric Exchange about a year ago. A. W. Egger, Central Illinois Light Co., Peoria, then read his paper as a sequel to the previous one.

Three formal luncheon conferences were held on April 8 on Customer Accounting, Customer Collections and Customer Relations and brought out much interesting discussion and valuable information.

E. F. Albert, The Philadelphia Gas Works Co., and G. A. Wilson, Public Service Electric & Gas Co., Newark, N. J., at the Customer Collections luncheon directed some fast-moving discussions which emphasized that utility service is a necessity, second only to food and clothing, and that the inability of customers to get that service from another supplier makes it the utility company's duty to extend itself to provide good service.

Plans were discussed at the meeting whereby delinquent customers could start paying current bills and make small payments on past due balances as they are able. Such plans, it was felt, would build good relations and

give customers the kind of service which is most essential.

Lessons learned from recent shortages of meters as summarized by W. A. Hill, Delaware Power and Light Co., Wilmington, was the subject of a lively discussion at the Customer Relations luncheon.

Accounting forms which reach the customer were targets of some pointed criticism. An interesting exhibit of some of these forms was set up by Harry Jeffs, Queens Borough Gas and Electric Co., Far Rockaway, N. Y. Inability of the customer to easily read meter reading cards, the use of language or symbols unfamiliar to any but accounting people and a rather general disregard of the customer's viewpoint were some of the darts thrown at the material exhibited.

The question of Saturday closings for business offices excited warm discussion with the consensus that the problem should be left for individual companies to solve according to local conditions.

A. W. Fyfe, Consolidated Edison Company of New York, Inc., and Frank W. Phelps, Union Electric Co. of Missouri, St. Louis, were discussion leaders at the Customer Ac-

counting luncheon. Highlights were an exhibit showing "Wrinkles" and discussion of the subject and prorating of irregular period billing.

Concurrently with the accounting conference 15 of the country's leading office machine and equipment manufacturers staged an exhibit of recent accounting machine developments which proved of great interest to those attending the conference. Among the machines displayed was the same model Friden automatic calculator which recently was pitted against the Japanese abacus in Tokyo. Another innovation, Telegas, a low cost remote gas meter reader, attracted considerable attention.

Brief afternoon committee meetings were held on April 9, and then following tours of inspection of the accounting departments and storerooms of the local Iroquois Gas Corp., and Buffalo Niagara Electric Corp., the tired delegates packed their bags and departed for their different companies with the knowledge that the conference they had just attended was, in their own words, "one of the best ever."

Plan Broad Curriculum For Short Course

CURRICULUM for the second annual Short Course in Gas Technology at Texas A & I College is announced by Dr. Frank H. Dotterweich, head of the A & I Engineering Department and chairman of the administrative committee for the course.

Sponsored by the Southern Gas Association, the course is scheduled for May 27-30, with enrollment, other than local, limited to 150.

Twelve hours of classroom and laboratory instruction are offered in each of the following subjects: (1) technical problems of production and transmission and (2) technical problems of gas utilization. A general assembly will be held on the first and last days to present speakers discussing trends in gas utilization and in natural gas research developments.

Production and transmission section classes will study pressure welding, backfills for sacrificial anodes, corrosion in condensate wells, improved methods of pipeline design, electrolytic models and continuous well logging.

Utilization students will study rice drying, dehydration of farm products, design and application of submergent gas burners, advanced design and application of all-year gas air conditioning equipment, dehydration and quick-freeze methods of food preservation, and special applications of natural gas.

Instructors will be members of industry and A & I faculty members. Demonstrations will include latest gas analysis procedures using super fractionation equipment and depiction of sub-surface fluid flow utilizing electrolytic model tables.

Frank S. Kelly Jr., vice-president of the Arkansas Louisiana Gas Co., is chairman of the advisory committee appointed from in-

dustrial leaders. Frank C. Johnson, Kingsville manager, Houston Natural Gas Corp., is chairman of the committee on arrangements.

Hartford Gas Sets Record

A NEW record was set by The Hartford Gas Co., Hartford, Conn., in 1946 when the continued growth of recent years resulted in 62,446 customers and gas sales of 3,343,951,000 cubic feet. In his annual report to the board of directors N. B. Bertollette, president, stated that customers increased 1,376 or 2.3 percent.

Residential gas sales for cooking, water heating and refrigeration increased 5.4 percent. Residential housing development gas sales to new projects with 3,400 tenants using gas for cooking and water heating rose 1.5 percent.

CATALYSTS

(Continued from page 225)

that its activity would hold up better under long exposure to H_2S than the plain nickel sulfide catalysts which had a higher activity but which were more affected by the hydrogen sulfide.

The fact that some nickel oxide catalysts have been prepared which had a very high activity tends to encourage further investigation to determine the cause underlying the wide differences in results obtained with various preparations of this material. It would be interesting also to determine whether the sulfur resistance of catalyst 43 ($NiS.Cr_2S_3$) would persist under long exposure to hydrogen sulfide.

Residential Gas Section

WALLACE M. CHAMBERLAIN, Chairman

C. S. STACKPOLE, Vice-Chairman

F. W. WILLIAMS, Secretary

Full-Speed, Sales Ahead!

BY WILLIAM C. GORDON, JR.

Market and Research Analyst, Curtis Publishing Co., Philadelphia

THE title of this talk, "Sales Ahead," is a good title for it denotes foresight and progressiveness. It has "oomph" and sales appeal. It suggests a craft that is going places, knows how to get there, and has specific objectives in view. Will it reach these objectives—on schedule? Has the course been properly charted? Or, will the ship be blown miles off its course, be buffeted by trade winds, develop spring leaks and limp into port, long overdue? Much depends on the type of sales navigation, on the efficiency and seamanship of the selling crew and on the seaworthiness of the craft itself.

Consider for a moment the matter of seaworthiness. Some people question the vitality and future possibilities of the domestic gas market. Not long ago I saw an analysis of the gas business published by a well-known investment service. This report predicted a rather doleful outlook for the domestic market and implied that some of your problems virtually defied solution. Moreover, it gave no recognition to the effect of important merchandising developments that have taken place in your industry over the past ten years!

Preference For Gas

If I were a gas man such statements would make me hot under the collar! Your own industry figures disprove any claim that the domestic gas business is on the skids. Countless surveys of American public opinion have repeatedly shown a strong desire and quite often a decided preference for gas as a source of domestic heat and energy. Moreover such statements are also a serious indictment of your own sales abilities and methods.

Before growing too apoplectic, ask yourselves this question—What kind of a selling job have we done?

In terms of sales to domestic users 1946 was a peak year for the gas industry by any one of several measurements—customers served, volume of business, revenues. This group can take considerable pride and satisfaction—yes, and credit—from that fact.

Sure, the gas industry has tough problems to lick—what industry hasn't—but for my money it still carries a powerful sales punch in each arm. However, a powerful punch isn't any good unless you know how and when to use it. Few championship fights have been won on slugging ability alone. The fel-

low who wins the crown must be the better boxer, a little faster on his feet, more alert to openings and opportunities, able to absorb punishment, possessed of great recuperative powers, and above all he must carry the fight to his opponent. These are winning tactics and essential equipment in the prize-ring and in business. Does your industry have them?

Available evidence indicates it does. At the same time other evidence suggests that the gas industry hasn't always made the best use of the latent abilities at its command. Maybe you have worried too much about the New Deal, regulatory commissions, labor, or competition, and not enough about the fellow who can make or break you—the consumer.

There are already indications 1947 will be a record year for domestic gas sales. What about 1948 and the immediate years ahead? Will this domestic market continue to grow and expand? Can you hold this market and add to it in the face of vigorous, aggressive, keen competition? What steps must be taken to keep and increase the gains already made? To put it bluntly—where and how far do you go from here? The answer to these and many other perplexing questions rests squarely on the shoulders of those responsible for planning and administering the sales programs of the gas industry.

You people, the presidents, vice-presidents, sales executives, advertising managers and promotion directors of your respective companies, hold the key to the solution of these problems and can provide the answers. But, individually and collectively, you are on the spot! What you do now and in the next few years and how you do it will largely determine the direction your business will take for a long time to come. More than this it will determine whether the gas industry is to be an odds-on favorite in the economic race ahead or just another "also-ran."

These may sound like pretty harsh words coming from one who knows next to nothing about the gas business and isn't a salesman. My principal experience in salesmanship took place when, as a small boy, I operated a lemonade concession on the sidewalk in front of our house. The ingredients for the concoction were supplied by raids on mother's pantry.

Costs were not a factor; neither was production. Sales methods were strictly high pressure but got results. People, foolish or unwary enough to pass the stand, were confronted by the business-end of a water pistol, and the inevitable ultimatum. Temptation sometimes overcame salesmanship and many a conscientious customer learned to his sorrow the true meaning of the old adage—"let the buyer beware." Needless to say, repeat business was always at a low ebb.

This story has a moral. It illustrates the violation of a fundamental merchandising principle as old as the hills—to get and keep a market you must give customers the kind of product or service they want and educate them to its use!

It is neither my purpose nor intention to presume to tell you how to run your business. However, let me do three things:

1. Take a quick look at your markets and their potentialities
2. Discuss briefly some of the important trends and developments in distribution that affect the gas industry
3. Suggest a few specific steps to assist you in the formulation of sales policies and programs.

There is a large untapped, potential market of domestic gas customers. It is your job to

Henry Ford

● The newspaper obituaries called him an industrialist and made much of his developing and perfecting mass production by conveyor-belt and intensive functional procedure—and of his independence of Wall Street. And some of them raked up the old stories of his ignorance of history and literature and of his fantastic idea of ending World War I with a Peace Ship delegation to Europe. But won't the Class-members think over what they know about him—and see if there was in him any one greater and more remarkable trait than this: he could change his mind, even on subjects where he had gone on record—notably in his right-about-face on advertising. The real inventor works by experiment, trial and error and he recognizes the error. What a lesson!

—Printers' Ink.

Abridgement of paper presented at Sixteenth Annual Midwest Regional Gas Sales Conference, Chicago, March 17-18.

find out who and where they are. Consider the following facts:

1. New family units are constantly being established. Each of these in a gas service area is a potential customer.
2. Each new home built or purchased within connecting distance of a gas main is a market opportunity. The apartment dweller or renter who becomes a home owner also becomes a better market prospect for gas than he was before.
3. Latest U. S. Census estimates tell us there are about 38.5 million families in this country. The gas industry serves 20 million or more of these. Of the remaining 18 or 19 million families, it is a fair guess that there are still thousands within reach of a central gas supply who offer expansion possibilities. Your own president has estimated that the gas industry will add over 2.5 million new customers between 1946 and 1950.
4. A potential market among rural people has been built up for your industry through the growth of LP gas. Many consumers of this type who ultimately move to larger communities will thus be presold on gas and its advantages.
5. Every industrialist who uses gas in his business is a prospect for its use in his home.

There is another market ripe for expansion—the 20 million or so customers already on your books. Furthermore, this market gives you one tremendous advantage—*familiarity with your product*. Every customer using gas for any single purpose in his home is an excellent prospect for the rest of your line. Who knows, the family cooking with gas may be a definite potential for a house-heating, water-heating and refrigeration load as well. Any individual who has wrestled with one of those instrumentalities of the devil known as the "bucket-a-day" is either a candidate for an insane asylum or an automatic water heater—gas, that is.

"Many of these people won't change from other fuels to gas," you say. How do you know they won't? Have you made any real effort to sell them on the idea? Are you

Elected by Midwest Sales Council



B. H. Wittmann



W. L. Hayes

B. H. Wittmann, domestic sales manager, The Peoples Gas Light & Coke Co., Chicago, elected chairman of the Midwest Sales Council for 1948 and W. L. Hayes, sales manager, Montana-Dakota Utilities Co., Minneapolis, was elected vice-chairman, at the Council's first postwar regional meeting in Chicago, March 17-18

weekly going to throw in the sales-sponge simply because people are using other types of energy and equipment for household tasks which gas can perform equally well, if not better? If so, you are licked before you start! It doesn't necessarily follow that folks can't be converted from one product or service to another. There is too much evidence to the contrary. Look at your own experience for proof! Consider the customers you have wooed away from competitive fuels. Consider also those you have lost.

One more point about your potential market which is vitally important. American consumers are for you—they have said so many times. Here are two concrete illustrations to back up this statement. A study made by the Office of Civilian Requirements in 1944 showed that gas ranges and gas water heaters were the outstanding choice among American families planning to buy these items. In 1945 my own company published the results of a comprehensive national survey outlining the home ownership and repair plans of Ameri-

can families in urban America. The significant highlights of this latter study from the standpoint of the gas industry were these:

1. More prospective home owners preferred a gas furnace for house-heating than any other type of equipment. Furthermore, this preference for gas heat predominated in all income groups except the very lowest. In short, you have a decided customer preference in the best markets.
2. Among prospective home owners, gas led by a wide margin as a source of energy preferred for water heating purposes. Indicative of the broad market in this field was the fact that gas was the predominant choice at all income levels.
3. In the case of home owners planning to install new house-heating systems and water heaters, gas was still the choice of the greatest number.
4. Where families were planning to replace cooking ranges, the gas range held a slight edge over its chief competitor.
5. Only in the field of refrigeration did gas fail to come out with a margin of victory in consumer preference. But even here gas made a surprisingly good showing.

There are innumerable other surveys which tell the same story.

Yes, there are sales ahead for the gas industry but it won't be easy pickings. You can't sit back mentally licking your chops and expect this market to come to you! Not in this day of competitive selling and competitive markets! The gas industry has a terrific sales battle ahead of it—one that will demand the very best in thought, planning and execution. To win this battle, your sales campaign must be one of super-strategy!

Size-up the Field

Like every good military commander, the gas industry must first size-up the field of action and the conditions under which the battle will be fought. This means a recognition and understanding of certain fundamental merchandising trends which affect every industry. It also means an evaluation of the significant trends in relation to your business. Here are four basic developments that concern the gas industry:

A. Increased Emphasis on Selling and Distribution—Smart management everywhere has assigned the problem of selling and distribution top priority on its postwar agenda. This is generally true even in those industries where the problem of production has been the principal headache over the past several months. The American businessman knows that any semblance of lasting prosperity in this country depends on our ability to sell at a profit the things we are equipped to produce. He also knows the day of deferred demand and shortages in the supply of finished goods will invariably end. Right now, he is beginning to fortify his company against this contingency by careful planning of his sales activities and methods. Any company or industry that fails to do likewise is due for a severe jolt!

The gas industry is perhaps more fortunate than some. Being less concerned with produc-

Huge Housing Project To Use Gas

● The gas industry owes a vote of credit to the Public Service Co. of Northern Illinois, Chicago, for its successful efforts in making Oak Lawn Manor one of the nation's largest postwar housing projects to use all-gas equipment for the four major services of refrigeration, cooking, water heating and house heating.

As mentioned in *Servel News*, all 1,200 homes in Oak Lawn are being equipped and sold to war veterans with six-foot gas refrigerators, four-burner gas ranges, automatic gas water heaters and gas house heaters.

George D. Lynch, gas sales manager of the Public Service Co. gets the plaudits of the industry for this accomplishment, particularly in view of the fact that the project was origi-

nally planned for all-electric kitchens.

On March 16, 1946, Mr. Lynch read an announcement of the project in the *Chicago Tribune* which stated that "the kitchens will contain a preassembled metal unit containing an electric range, a built-in electric refrigerator, sink and counterboard, cabinets and automatic ventilation."

Hoping to include gas appliances in some of the homes, Mr. Lynch sought out the architects and builders with the idea of swinging a few houses from electricity to gas. In the end he completely sold them on the obvious advantages and comfortable living features of all-gas appliances to the extent that gas is being used exclusively for the four major household services.

tion worries and blessed with a relatively stable market it is in a better position to devote a greater share of managerial energies to sales planning. Take advantage of this opportunity to place sufficient emphasis on selling. Don't underestimate what your competitors are doing in this respect!

B. Aggressive Product Promotion—On every hand we see evidence that American industry is going "all out" in attacking the problem of product promotion. These attacks take a variety of forms—a step-up of institutional and brand advertising in national consumer magazines, broad scale demonstrations, consumer planning aids, improvement in service facilities, greater dealer assistance and education, better styling and design, strengthening of distribution systems, more scientific sales training, improved methods of financing and a host of others.

Through its campaign of cooperative advertising, the "CP" range program, home service and kitchen planning activities, the gas industry has made important strides in aggressive product promotion. But how much has it done—how much does it plan to do—to combat the efforts of competitors in other directions?

C. A Better Knowledge of Markets—The time has long since passed when a business can be run by intuition and guesswork alone. Successful management no longer "flies by the seat of its pants," but uses instruments, the latest scientific devices and controls. This is true of production and accounting and should be equally true of sales. On every hand there is a burning thirst for more information about markets—their location, makeup and characteristics. We see it all the time in our business! You can bet your bottom dollar that those who possess the most facts about the market they serve will have the best sales record. Some of your competitors right now know as much or more about your markets than you do. Isn't it high time the gas industry got wise to this fact and began to acquire the sales tools it needs to do a bang-up job of selling?

D. Packaging—This country is in the midst of a package spree. Practically everything one can think of is sold by the package—food, houses, kitchens, bathrooms, travel, repair jobs, funerals, insurance, movies, etc. Even romance has been packaged for the bride, who can now purchase a complete wedding, from the clothes in her trousseau to the frosting on the reception cake. Logically enough, the arrival of her first baby is provided for by the packaged nursery.

Sell the Package

Why not put greater emphasis on selling gas by the package? Maybe the time has come when you should take greater advantage of this trend. Maybe it would be good merchandising policy for you to redouble efforts to sell automatic gas service to the consumer in a complete package. Operating in five main fields—cooking, water-heating, house-heating, refrigeration and temperature conditioning—the gas industry has an opportunity to sell the whole ball of wax. Think it over!

Let me add another thought in this con-

A. G. A. Opens Gas Heating Progress Contest

INDIVIDUALS who have made outstanding contributions to the advancement of gas house heating will receive a total of \$1,000 in cash prizes this year in a new annual contest conducted by the American Gas Association and sponsored by The Coraire Heater Corporation. Winners of the A. G. A. Gas Heating Progress Award as it is known will be announced at the Association's Annual Convention in Cleveland, October 6-8, 1947.

Purpose of the award is to give public recognition to those individuals who have done most to create, maintain and increase consumer demand for gas heating. It is open to any executive or employee of any gas utility, holding or service company member of the American Gas Association or any individual members of the Association, with the exception of employees of gas appliance manufacturers.

Five awards will be made as follows: first, \$500; second, \$250; third, \$150; fourth \$50, and fifth, \$50.

The initial awards in this annual contest will be made to those individuals who have

made the greatest contribution during the period from July 1, 1946 to June 30, 1947. Entries must be postmarked not later than June 30, 1947 and should be addressed to the American Gas Association, 420 Lexington Avenue, New York 17, N. Y.

Contributions will be judged by a qualified Jury of Awards representative of the gas industry. Such contributions may be in the form of a gas heating research project, product development, an address before a gas industry meeting, a written article in a gas trade magazine, or any other activity contributing to gas heating progress.

Satisfactory descriptive material and evidence of accomplishment must accompany each entry, and contestants are requested to eliminate all identification from the material submitted for judging. The contestant's name and company should accompany the material on a separate sheet.

A brochure containing complete details of the contest will be mailed to delegates of all A. G. A. company members and to gas utility sales managers early in May.

nection. The idea of packaging is associated with home products, large units sales, trade mark identification, pictorial appeal and long term demand. Magazines are particularly well-adapted to take full advantage of this trend because they meet all of the essential requirements of package promotion.

Now, to lead with my chin! There are a number of things which, as an industry or as individual companies, you *could* do in order to capitalize on market opportunities and developments. I am going to mention a few, some of which are being done. They are merely suggestions if they don't make sense, charge it up to my ignorance of the gas business and the impracticalities of a research man. If, on the other hand, you get just one constructive idea then perhaps this talk has been worth-while. Anyway, here goes!

1. *Support the Association's national consumer advertising campaign to the limit!* Go further than this—insist on support and insist that it be continued! Effective institutional advertising at the national level helps to clear the path of consumer resistance in local markets. Operating as a team increases the chances of victory over individual sales objectives. Where would you be today if you hadn't done this ten years ago? And where will you be ten years from now if you don't keep it up?

2. *Tie-in to A. G. A. national advertising with local sales promotion!* Whenever possible, utilize the material developed by your Association to increase the effectiveness of individual company sales campaigns. Tell the public, your customers and appliance dealers about it. Only in this way can you obtain the maximum benefit from a joint advertising program. See that none of the effort is wasted.

3. *Start training a hard-hitting sales force now!* You will need it. Next year may be too

late. No industry or company can successfully meet the sales challenge ahead without a well-planned sales program and a highly-trained sales force to execute it. What good are touchdown plays if the players don't know how to carry out their assignments? One of the best potential salesmen you have is the chap who reads the gas meter. He is on the firing line, knows what is going on—and can be a valuable fountain of information. Another is your service representative and anyone else who comes in contact with the customer. Adequate sales training of these groups might pay handsome dividends. Besides it will give them a tremendous lift and greater pride in their jobs, their company and their industry.

4. *Study and know your market!* Indulge in some intensive market research both at the national and local level. Research planning on an industry-wide basis can be of inestimable value to the individual company. Find out *what* your customers want, and *when*. Follow closely developments that affect the potential market. Get the facts, analyze them, form your conclusions—*then act!* Just remember, competition is drawing a bead on your markets, too. It is largely a question of who shoots first and with the greatest accuracy.

5. *Help the appliance dealer.* He can be one of your biggest assets. Work with him in the development of sales and promotional campaigns. Take him into your confidence as much as possible. Supply him with dealer aids; give him guidance; discuss his problems. Recognize him in your advertising. Let him participate in profits from the appliance business. Working together, the gas industry and the gas appliance dealer are a formidable combination; operating at cross-purposes, both stand to lose. Even those of you who

have appliance merchandising departments of your own should find this a profitable policy.

6. *Intensify demonstration and display programs!* Put some glamour into them. The public likes to be shown and is attracted by those things which have real eye appeal. Step-up home service demonstrations in schools and colleges, if possible. These young people are your future customers and are a powerful sales force in present day homes. The favorable impressions you make on the youth of today will be reflected in the sales of tomorrow.

7. *Extend the "CP" program!* Years of experience have proven the value of this is a merchandising tool for ranges. Is it adaptable to water-heating, refrigeration, house-heating? If so, why not broaden it to include these other areas of gas service?

8. *Analyze your price structure!* Are you giving customers the best possible breaks on cost of gas service? Would revisions in rates profitably increase the volume of domestic business? Or are you gradually pricing yourself out of a market? Take a look, and see!

9. *Develop the idea of automatic gas service!* This is a machine age. People are tremendously impressed by things which lighten the burden of everyday life. They like to push buttons, twist dials or flick a switch and see things happen as a result. By associating in

their minds the thought that gas is automatic, too, the gas industry can capitalize on an attitude which places an increasingly greater premium on service as an element of sales appeal.

10. *Establish a working relationship between commercial and domestic sales departments!* This will serve as a clearing house for sales information and leads. Each can be helpful to the other.

11. *Watch replacement market possibilities!* It won't do any good to wake up some morning only to discover that old customers have switched from gas to something else. For example, it is estimated that there are now in use 12.5 million obsolete gas ranges over ten years old which need to be replaced. How many of these range customers will stay with you when the time comes to replace this equipment? You must know the who, where and when of equipment replacement!

12. *Follow developments in household equipment!* Work closely with manufacturers of these items on matters of styling and design. The gas industry isn't necessarily immune from the effects of style changes, nor should it resist them. New innovations may offer market opportunities you never dreamed existed. Cooperate with other industries that can help you.

13. *Improve the quality and scope of cus-*

tomer service! If you have to, appoint a "Vice-President in charge of trifles" to worry about the little things that please or irritate customers. Good customer relationship is a business builder. When you lose a customer, find out why! Quite often this will prevent a repetition of the same mistake. But also make sure present customers are satisfied this is the best way to keep them.

Develop Appeals

14. *Develop and maintain strong advertising and promotional appeals!* This is the focal point of all your selling activities. Paths are never beaten to the doors of fellows who make better mousetraps unless they tell the world about them and sell them.

These are only some of the things the gas industry can do to build sales. There are many others. Market research, sales training and aggressive advertising and promotion are perhaps the most important. Like a good navy, all three must be well-coordinated.

Market research may be likened to the air arm. Without the facts which market research can provide, an industry is a "sitting duck," crippled offensively and deprived of essential coverage badly needed for the sales job ahead. Sales training is battle training! Without adequately-trained crews that know what to do when the going is toughest, ships can be put out of action. Advertising and promotion are the big guns of the sales fleet! With them sales objectives can be softened-up preparatory to assault. Without them the problem of establishing a consumer beach-head becomes an extremely difficult matter.

Bright Future

The next 20 years belong to the salesman—in your business as well as others. Sales organizations are like ships. They must be repaired and kept in shape. My advice to you is—get them in shape fast, there may be heavy weather. Scrape off the barnacles that retard sales progress. Caulk up the seams. Mend the rigging. Hire an efficient crew and train them well. Chart the course you want to follow, in advance.

Once you have made things shipshape and weighed anchor, turn your company's nose into the teeth of the wind and keep it there. Don't wallow in the trough of the waves or you may capsize. There are squalls ahead, perhaps a hurricane or two. But remember, you can't ride out the storm in some safe lagoon—a tidal wave or an atomic bomb might hit you! Set your sales—full sales—straight ahead!

GAS PROMINENT AT RESTAURANT EXPOSITION

(Continued from page 212)

Co., Inc., Market Forge Co., Modern Fryer Manufacturing Co., National Comice Works, Royce L. Parker, Inc., Pitman Manufacturing Co., J. C. Pitman & Sons Sales Corp., Robertshaw Thermostat Co., Savory Equipment, Inc., A. O. Smith Corp., Specialties Appliance Corp., Standard Gas Equipment Corp., Star Manufacturing Co., John Van Range Co., and Thomas J. Webb Company.

New A. G. A. Home Service Award

NEW regulations providing equal opportunity for individual recognition and company awards, regardless of size, have been announced by the American Gas Association for the A. G. A. Home Service Achievement Award sponsored annually by *McCall's Magazine*. Cash prizes totalling \$1,000 will be made in five equal awards which will be presented at the Association's Annual Convention in Cleveland, October 6-8, 1947.

Home service directors and individual members of Home Service Departments of gas utility companies which are members of the American Gas Association are eligible for the awards. They will be made to the directors of departments for achievement in the area served by the company and to those individuals whose ideas are judged to have contributed most to the advancement of modern home-making by promoting interest in and better use of gas and modern gas equipment in the home.

Unique feature of the contest is the recognition of individual ideas as well as contributions of home service departments. Such ideas of achievement may include community or group activities, home call operation, cooperation with the gas company, equipment or sales promotion, kitchen planning, activities with educational or other groups, or any other outstanding home service activity. Awards will be made for the year ending July 31, 1947, in three divisions:

A—Companies with more than three persons in the Home Service Department, \$200

to the home service director and a bronze plaque for the company.

B—Companies with at least one but not more than three home service representatives, \$200 to the home service director and a bronze plaque for the company.

C—Three awards of \$200 each and a bronze plaque for the company will be made to the individual members of the Home Service Departments of three different companies whose ideas have contributed most to the advancement of modern home-making through the use of gas equipment. Such advanced thinking might encompass a dream idea, a project in the formative stage, or a modernized version of any home service activity.

All home service personnel may enter one or any of the three divisions but only one award will be made to an individual or company. Contestants are requested to eliminate all identification from the material submitted but to send their names, companies and division entered on a separate sheet.

Entries must be postmarked not later than July 31, 1947 and should be addressed to American Gas Association, 420 Lexington Ave., New York 17, N. Y.

The Jury of Awards will consist of the chairman and vice-chairman of the A. G. A. Residential Gas Section, chairman of the A. G. A. Home Service Committee; chairman of the A. G. A. National Advertising Domestic Copy Committee and an outstanding home economist.

A brochure giving complete details of the contest will be mailed early in May to all A. G. A. company member delegates, home service personnel and sales managers.

Pacific Coast Home Service Workshop

WITH guests and speakers from British Columbia to Southern California and one each from New York and Indiana, the Workshop jointly sponsored by the Home Service Committees of the American Gas Association and Pacific Coast Gas Association, was held at Oregon's famed Timberline Lodge on Mt. Hood, April 1 and 2 in a setting of snow and ice.

The group left Portland the afternoon of March 31 for the two-hour scenic drive to the Lodge at 6,000 foot elevation, believed to be a "new high" for a home service workshop in the United States. Rita Calhoun, home service director, Portland Gas & Coke Co. and this year's chairman of the P.C.G.A. Home Service Committee, headed the Workshop.

Jessie McQueen, New York City, A. G. A. home service counsellor, traveled farthest to attend the conference. Next was Clara Ridder of Evansville, Ind., director of home economics for Servel, Inc. Then came the delegation from Southern California.

That you can still cook with gas at an altitude of more than a mile was demonstrated when a Vendo "Fourth Zone" cooker made its Pacific Northwest debut, as did the new Bendix gas-fired automatic home laundry dryer. Bottled gas was used in each case.

Luncheon Meetings

Two luncheons were held for the entire group with the P.C.G.A. as host, and an ensemble dinner with table decorations featuring a colorful little "pipe-stem cleaner" Blue Flame man on skis, the ingenious handiwork of Frances Fricker, Portland Gas & Coke Company. Also introduced at the workshop was the American Gas Association's new "Miss Flame" comic book history of the gas industry.

Speaking on "News and Views of Home Service," Miss McQueen stated that new appliances and utensils, new methods of food preparation and even new foods are enlarging the field of home economics so that already there are more attractive positions than trained people to fill them.

She urged that the profession's opportunities be made known to young girls and declared that modern gas appliances in home economics departments of schools are important in glamorizing the profession. She also stressed the importance to home economics people of familiarizing themselves with the home maker's reading and thinking habits.

Miss Ridder brought her story of "Planning Unified Kitchens" up to date, described Servel's extensive research on the subject and said that results soon would be available in printed form.

Showing the Bendix gas laundry dryer for the first time in the Pacific Northwest, Frances Alexander, home economist for the Harper-Megee Co., Portland appliance distributors, explained and demonstrated its operation. She outlined the dryer's advantages and said that a survey indicates that

four-out-of-five women would like to have one to complete their laundry equipment.

A colorful film and sound narrative produced by the Cling Peach Advisory Board showed effective results of gas industry co-operation with promotions by other industries. All of the mouth-watering dishes shown were prepared either in a modern gas refrigerator or a modern gas range.

A sales promotion which Portland Gas & Coke Co. helped start was described by Gertrude Lemery of the Newcomer Service which branched from welcoming new families to Portland in behalf of gift-giving sponsoring firms to welcoming new-born babies in a similar manner, leaving a year's

Portland Gas & Coke Company's new locally produced sound slide film, "Hot Water Helps," made its debut at the conference and was hailed as a powerful sales tool especially valuable in highly competitive areas.

Immediately following the film, a symposium on "Home Service and Water Heater Promotion" was conducted by the company's promotion manager, Fred M. Kimball; superintendent of utilization, D. E. Farmer, and residential sales manager, C. W. Steele.

Reports and discussion of Pacific Coast Home Service programs, as presented by representatives from the various companies brought out the fact that follow-up home calls after company or dealer range sales, have been revived in a big way since the war's end. Various group contacts are being



Braving 12 feet of snow during Home Service Workshop at Timberline Lodge on Oregon's Mount Hood are girls from five states and Canada. Left to right are: Geraldine Mann, Vancouver, B. C.; Ruth Klumb, Seattle, Wash.; Rita Calhoun, Portland, chairman; Cristabel Anderson, Hollywood; Jessie McQueen (A. G. A.), and Clara Ridder, Evansville, Ind.

subscription to "Small Talk" as a continuing sales tool.

Frozen foods took the spotlight at the luncheon and the second day when Keith Fenner, quality control manager, Birds-Eye-Snyder Division of General Foods, spoke on "Operations Frosted." The "Fourth Zone Cookery" demonstration was conducted by Lois Hoesacker of Portland Gas & Coke Company's home service department.

Again emphasizing the growing importance of kitchen planning to home service, Maud Wilson, national authority on the subject and director of home economics at Oregon State Agricultural Experiment Station, spoke on "Functional Planning for Storage Space in Modern Kitchens."

A bright future for the automatic clock control on gas ranges was predicted by Gladys Price, home service director for Southern California Gas Co., Los Angeles. Homemakers like the automatic clock control and will buy it, she declared, admitting that it is a challenge to home service to provide practical, complete-meal menus and otherwise educate homemakers in making full use of the automatic control.

expanded, according to the reports, with schools high on the list.

Other types of home service activities described at the workshop included radio programs, newspaper columns, information and home planning centers, aid in sales and service training programs and company dealer sales floor demonstrations.

Reports were given by Cleo Filsinger, Pacific Gas & Electric Co., San Francisco; Herberta Peet, Portland Gas & Coke Co.; Geraldine Mann, British Columbia Electric Railway Co., Vancouver; Ruth Klumb, Seattle Gas Co.; Dorothy Duncan and Katherine Rathbone of Southern Counties Gas Co., Santa Ana and Los Angeles, respectively; Cristabel Anderson, Southern California Gas Co., Hollywood; Thelma Fahrenkrog and Mary L. Walsh, Coast Counties Gas & Electric Co., Santa Cruz and Martinez, Calif., respectively, and Margaret A. Foulds, British Columbia Electric Railway Co., Victoria.

Clifford Johnstone, P.C.G.A., managing director, and his assistant, J. E. Kern, attended as did Harry Lee, chairman of the P.C.G.A. Sales and Advertising Section and

(Continued on page 254)

Industrial & Commercial Gas Section

KARL EMMERLING, Chairman

LECN OURUSOFF, Vice-Chairman

MAHLON A. COMBS, Secretary

Commercial Gas Cooking Program



John J. Bourke

WHEN I say the commercial cooking load is the gas industry's most valuable load, I am by no means coining a phrase, for this fact has been repeatedly brought to the attention of the industry in the past. With the passage of time, this segment of gas sales has become no less valuable but

has become subject to ever-increasing, vigorous competition. The past six years have brought about circumstances which have placed this load in the most vulnerable position it has ever known.

Many G.I.'s returning to civilian life learned to cook in the service. Many are opening their own restaurants, others are working in volume cooking establishments. In either event ex-servicemen will one day be in the position of selecting cooking equipment or exercising an influence on its selection. Cooks on shipboard in the Navy or Maritime Service invariably cooked with electricity as they also did in many shore stations. The equipment used was built to high government specifications to assure continuous operation in localities far removed from maintenance facilities. It was good electrical equipment, better than standard commercial models. Cooks who used these appliances will assume that the electrical equipment available on the commercial market will be of the same super-quality.

Dietitians serving in Army and Navy hospitals where, either by necessity or preference the cooking was done by electricity, have separated from the service taking with them a favorable attitude toward electric cooking. This often results from the fact that electric appliances in service hospitals were new and superior to commercial electric models, while the dietitian's experience with heavy-duty gas appliances had been with obsolete equipment in the college laboratory where she studied and perhaps even in the hospital where she took her advance training or worked as a graduate dietitian.

Presented at A. G. A. Sales Conference on Industrial and Commercial Gas, Boston, March 17-19.

BY JOHN J. BOURKE

Director, Commercial Gas Cooking Promotion, American Gas Association

Manufacturers of heavy-duty electric cooking appliances who were not supplying the commercial field before the war have been drawn into this market as a result of the war. The war has brought out new and spectacular food preparation techniques such as dehydration, pre-cooked frozen foods, and far from least important to the commercial gas man, high-frequency electric cooking.

Each new electric appliance or cooking method is an additional reason for the gas industry to sing the praises of its products and keep customers advised of the myriad advantages of gas appliances. The typical American reaction is that newness symbolizes progress. We therefore must make known the modern features of gas appliances.

The promotional activities of the electric industry have been stepped up in recent months with a national radio program each Sunday afternoon building public acceptance for all electric services using the theme that you get more for your electric dollar today than ever before.

Strong Competition

Gas men have reported that in some cities the manpower used by electric utilities and equipment manufacturers to promote commercial cooking often exceeds the number of men doing the same work for the gas industry by as much as 15 to one.

Some gas companies are thoroughly cognizant of this increasing competitive situation. About a year ago the Southern Gas Association conducted a survey of a cross section of its member companies in 13 states asking what their competition was in 1941, what it was in 1946, and what they anticipated it would be in 1951.

The replies show that of the 13 states only four considered electricity their competitor in 1941; by 1946 the number had jumped to seven; and their studied guesses as to the future were that 11 of the 13 would be fighting electricity by 1951.

This study was made in a predominantly natural gas area. A nationwide study which would include a higher percentage of manufactured gas companies would certainly be no better.

Recognizing our competition, our attention now must be directed to the most effective methods of combating it. There is nothing more effective than a vigorous, hard-hitting sustained promotional campaign both at the national and local level.

This need was recognized by the industry and resulted in the creation of the Promotion Bureau of American Gas Association which has now been in operation for more than a year. As a member of this Bureau my work encompasses the promotion of gas for commercial cooking in this program.

Good public relations with allied industries constitutes an important portion of the program. Effort is made to bring to the attention of these consumer groups the desire of the gas industry to serve them in a way that will contribute to the most efficient and economical conduct of their business. This is done by attending state, regional and national gatherings of hotel, restaurant and hospital associations, dietetic and nutrition groups and other meetings of people engaged in the business of volume cooking.

In order to assure coverage of all these meetings every known organization of this type is contacted and offered the services of a speaker on its program. When the organization accepts this offer, the speaking assignment is filled in one of several ways. When possible, I give the talk myself. When distance or other duties preclude this, the gas company in the city in which the meeting is to be held or a nearby city, is requested to provide the speaker. If desired, this man is supplied with material for his talk or the entire speech written for him at A. G. A. headquarters.

Operators of volume cooking establishments are highly interested in new developments in cooking appliances, innovations in cooking techniques, what to expect in future equipment and cooking methods. At this time they are hungry for appliance delivery dates. They also are appreciative of information as to what services are available through their local gas company and through A. G. A. The surprising number of customers unaware of these services indicates an opportunity to create further good will for gas.

Where it is not possible to persuade consumer groups to provide a spot on their program for a speaker, the local gas company is requested to send a representative to extend the good wishes of the gas industry for a successful convention.

About 4100 chain organizations in the country have food dispensing facilities. These include chains in such fields as hotels, restaurants, drug, variety and general merchandise stores and industrial cafeterias. As the units of these organizations are often in localities far removed from their headquarters, the policy making personnel are not readily accessible to local gas company representatives. As part of the A. G. A. Commercial Promotion Program I have undertaken to personally contact as many of these headquarters as possible. In this way the chain operator becomes aware that the gas industry appreciates his business and is anxious to keep it. He is kept up-to-date on gas-fired appliances, his suggestions and criticism of equipment are solicited. The cooperation of the gas industry is offered him, and he is provided with such literature as the A. G. A. pamphlet "Getting the Most Out of Your Gas Cooking Equipment" and the Fenton Kelsey "Gas Equipment Catalogue." In addition 300 of the more important chains receive each month one or more copies of "Cooking for Profit," with the cost assumed by the A. G. A. Special Promotion Fund. Reprints of commercial national advertising have been sent to an even larger list of these chains.

Close Contacts

This close contact with fuel and equipment selecting personnel of chain organizations makes them easier to approach when they are about to establish a new unit or make changes in existing ones. Gas company representatives and equipment manufacturers' representatives have called on me to contact these chain headquarters when a change in fuel or equipment is anticipated in a chain unit in their locality. This call on the headquarters is necessary because the person in charge of the local unit rarely has the authority to make decisions concerning fuel and equipment.

When it is impossible for me to make a personal call, I solicit the cooperation of the gas company in the city in which the chain's headquarters are located. Equipment manufacturers' representatives have been most helpful in supplementing gas companies' calls with calls of their own.

In order to properly answer the inquiries concerning commercial cooking equipment which regularly come to A. G. A. headquarters and also are put to me in interviews with consumers, I have visited the plants of as many equipment manufacturers as possible. In these visits I have familiarized myself with their methods and production problems and have gathered information on anticipated production and delivery dates which is passed on to interested consumers.

Calls on manufacturers who have recently entered the gas appliance field offer an opportunity to familiarize them with the work of A. G. A. and G. A. M. A. and the advantages of belonging to these organizations.

There is a list of 59 schools throughout the country which teach commercial cooking

subjects. Some of these train their students for executive positions while others design their courses for students who will be working cooks and bakers. All are important to the gas industry. The instruction given in these schools and the equipment used have a weighty influence on the selection of fuel and equipment when students later are in a buying capacity.

With this thought in mind a lecture with an accompanying film strip has been written for these schools and can be used as an outline if the speaker prefers to use his own words, or can be read to the students. It is intended that the gas company in the town in which each school is located will have one of its commercial men deliver the address. This lecture is available through A. G. A. at no cost to the member company.

The head of the school's commercial cooking department receives each month a copy of "Cooking for Profit" and has been sent a copy of the Fenton Kelsey gas equipment catalogue.

Visits have disclosed that many of these schools are using obsolete and inefficient gas equipment. Hundreds of students are graduating each year and taking with them an unfavorable opinion of gas equipment because the gas appliances on which they have learned do not represent the type of equipment we are trying to promote.

In order to overcome this condition an effort is now being made to get the appliance manufacturers to inaugurate a replacement program for schools teaching commercial cooking similar to those plans offered by domestic range manufacturers for schools teaching home economics. These plans generally call for 50 percent discount on the manufacturer's list price to the school for the initial installation. This equipment is changed periodically at no cost to the school. Some plans call for an additional ten percent discount for the utility or dealer handling the transaction. The utility or dealer gets the used equipment when a replacement is made and can sell it, usually at about 25 percent below retail price and in that way realize an additional profit.

In order for these important potential purchasers to maintain a favorable attitude toward gas equipment, they must learn on modern efficient equipment. The most satisfactory way of being assured of the best equipment in these schools is to put into operation a replacement program. The support of every commercial gas man is solicited in helping to persuade the manufacturers to participate in this program. A number of the schools have been sounded out to find what their reaction would be to such a plan and have been unanimous in their approval of the idea. It is now up to the manufacturers.

Another proposed project is to make available to member companies a lecture-demonstration to show cooks, bakers, hotel and restaurant operators and others engaged in volume cooking various ways of cutting cooking costs, proper cooking methods, how to get maximum efficiency from gas appliances and correcting some of the popular

misconceptions about gas cookery. Several chefs have been interviewed as possible candidates for this program and a budget now awaits A. G. A. authorization. The Association will be asked to advance the funds for conducting the program and the actual cost will be assumed by the utility in the cities in which it is conducted.

The commercial man in member companies has been most helpful in outlining the promotion activities of his company. I have passed on this information to companies subsequently visited when the ideas would be helpful. This interchange of ideas has been effective in stimulating interest in additional promotion among member companies.

The Industrial and Commercial News Letter celebrated its first birthday in March. The three Industrial and Commercial staff members collaborate in writing it and find that it has created ever increasing interest among section members. It offers a medium of transmitting to members promotional ideas and items of special interest to them. Items that you think would be of interest or help to other members of the Section will be gratefully received.

During the past few months we have distributed more than 25,000 copies of the booklet "Getting the Most Out of Your Gas Cooking Equipment." The interest in this booklet has been so enthusiastic that the possibility of providing member companies with additional printed material is being investigated. The ideas of commercial men as to what type literature they think would be most valuable will be helpful in guiding this program.

Upon request I have been able to help some of the smaller gas companies' promotion plans by outlining a program based on the successes experienced by other companies.

At the present time, George Segeler, A. G. A. Utilization Engineer, is gathering data to compile a guide for providing the proper size gas water heating equipment for use in volume cooking establishments. When this information is complete it will be included in the forthcoming A. G. A. publication "The Commercial Gas Kitchen," also put into booklet or chart form and made available to gas companies for distribution among plumber-dealers, architects, and other groups interested in installation of hot water equipment in commercial cooking operations.

Educational Film

The possibility of producing an educational film on commercial gas cooking is being investigated. This film would be shown before audiences of trade associations of allied industries, commercial cooking schools and other similar gatherings to assure the continued acceptance of gas as a cooking fuel.

In addition to these activities my work includes such duties as:

1. Policing commercial cooking trade publications to see that gas and gas appliances are properly represented.
2. Encouraging appliance manufacturers

to mention in their advertisements in these publications that their products are gas-fired. They are also requested to cooperate with the efforts of the A. G. A. Section's National Advertising Committee by showing the trend chart in their advertising.

3. Attempting to persuade food service equipment dealers and appliance manufacturers, especially those that manufacture both gas and electric appliances, to display gas equipment at expositions such as hotel and restaurant shows.

4. The case history type of advertising which is used in our national advertising program involves collecting data on installations suitable for these ads. Cooperating in gathering this material falls within my scope and it is done personally with the assistance of member companies.

5. My most unusual assignment to date was trying to locate "George Adams." This name, whether fictional or real I still don't know, was given by a character who performs the dubious service of insulating the oven bottom of ranges in volume cooking establishments. He is an operator of what is popularly known as the "gypsy racket." This is a scheme whereby one or more of these characteristically nomadic people approach a restaurant or hotel operator and offer to clean and adjust his ranges at a modest price. They do a good cleaning job and as they are about to finish it the leader, whom we'll call George Adams, suggests to the restaurant operator that he let them insulate his ranges. George says that as his men are already on the job he'll charge only for the material. The restaurant operator agrees and George's assistants stir up an asbestos cement mixture which they weigh while wet and place in the bottom of the combustion chamber of the range oven. Their charge for this alleged service is often as much as \$1 per pound for asbestos cement which costs about four cents per pound.

Of even more importance is the fact that the operators of this racket have been known to cover up secondary air openings so that sufficient air cannot enter to support combustion. There have been instances where the secondary air was cut off so badly that the oven burners would not stay lit and there was one installation in which an explosion occurred. The George Adams that I tried to locate was operating in the metropolitan New York area.

There is evidence that the same scheme has been perpetrated in cities all over the country. Whether the same people were travelling from one city to another or several groups are involved has not been determined. That was one of my reasons for seeking out George Adams. When I went to the address he had given to one of his clients, George was not to be found. Can you give any information that will help me find George Adams to show him the error of his ways?

Promoting Nationally

Promotion on the national level is important, but the combined efforts of all gas utilities on the local level are of even greater importance to successfully combat the ever-present forceful efforts of the electrical competition. We must step up our promotion now. We must never let an opportunity pass to bring to management's attention the value of the commercial gas load and the effort being made by our competition to take it away.

We must not be deluded into believing that we are on firm ground simply because more commercial gas cooking equipment is being sold today than ever before, for more electric commercial cooking equipment is being sold today than ever before. Gas companies which have made studies of the ratio have been

alarmed to learn the adverse position of gas.

We must not allow ourselves to be lulled into a false sense of security. Give me your suggestions and the benefit of your daily consumer contacts so that we at A. G. A. can help you to retain existing commercial cooking loads and create new ones.

A. G. A. Heat Treating Committee Meets



A. G. A. Committee on Heat Treating and Finishing with Gas, seated, left to right: C. C. Eeles, Toledo, O., chairman; Lee M. Humphrys, Minneapolis; Otto Lutherer, Cleveland; S. T. Olinger, Cincinnati; H. E. G. Watson, Toronto, Canada. Standing, left to right: Robert W. Milland, Detroit; A. H. Kock, Toledo; S. Proctor Rodgers, Baltimore; Andrew J. Huston, Worcester, Mass.; Oliver Pritchard, Brooklyn, and Leo J. Sullivan, Rochester, N. Y.

THE Committee on Heat Treating and Finishing With Gas, Charles C. Eeles, The Ohio Fuel Gas Co., Toledo, chairman, met in Boston, March 20, following the A. G. A. Sales Conference.

Principal activity of the committee this year is the preparation of a series of Information Letters for association distribution. Letter Number 11 on Heat Resistant Alloys is about ready to be distributed. Considerable discussion ensued over Letter Number 12 entitled Protective Coatings and it was decided that additional information was needed on the possible damage to furnace refractories by injurious materials emitted from protective coatings.

Information Letter Number 13 on Temperature Control Systems is ready for comments by the committee members. Other let-

ters contemplated or already in tentative form are:

- 14—High Speed Heating for Hot Forming
- 15—Proper Methods, Atmospheres and Oven Equipment for Curing Industrial Finishes
- 16—Design of Gas Fired Equipment for Surface Preparation of Metals
- 17—Heating Calculations for Spray Washers
- 18—Customer Acceptance of Convection vs. Infra-Red Ovens for Finish Curing
- 19—Manufactured Gas For Gas Carburizing Atmospheres
- 20—Application of Gas-Fired Dowtherm Heating Systems.

It is hoped in view of the preliminary work done on these proposed Information Letters that they will be completed and ready for distribution during the Association year.

A. G. A. Non-Ferrous Metals Group Active



A. G. A. Non-ferrous Metals Committee, meeting in Boston, March 20, following the A. G. A. Sales Conference, left to right: Allen M. Thurston, The East Ohio Gas Co., Cleveland; E. L. Woods, Springfield Gas Light Co., Springfield, Mass.; W. Wirt Young, W. Wirt Young & Associates Inc., Waterbury, Conn., chairman; Hale A. Clark, Michigan Consolidated Gas Co., Detroit, Conn., chairman; Hale A. Clark, Michigan Consolidated Gas Co., Detroit; Henry Hartman, The Brooklyn Union Gas Co.; James H. Doak, Connecticut Light & Power Co., Meriden, and C. George Segeler, American Gas Association

gas grapevine



The 1947 Restaurant Show in Chicago was a huge success. Your reporter managed to fight his way through the mobs to get a look at the Magic Chef new heavy-duty stainless steel restaurant range. It's dazzling! Lots of new gas stuff was there and mfrs. are actually giving delivery dates on equipment for the not too distant future.

Shades of the gay nineties! When they turn off the electric lights in Antoine's, New Orleans, so the customers can see the burning brandy on crêpe suzettes, a soft glow spreads over the dining rooms from many Welsbach gas lights on the combination fixtures.

The restaurant sanitation drive has reached the Pacific coast. Portland (Ore.) Gas & Coke Co., reports a new stainless steel gas kitchen at the Rose Room Grill that has a gas booster water heater on the dishwasher for sterilization.

Also 'way out there in Vancouver, Wash., the Rainbow Cafe has switched to GAS for economy, performance and dependable service!

A popular eating place in Atlanta is Mammy's Shanty which isn't a "shanty" at all but an attractive rambling one story building with several nicely appointed dining rooms and a spacious all gas kitchen. To provide space for waiting guests a high class gift shop was added near the main entrance. We are told that the gals love to browse around the gift shop, it keeps them happy and occupied while waiting for tables. It pays off too—plenty!

Off the record reports on the A. G. A. Boston Sales Conference, gathered in the nooks and corners where gas men congregate after sessions, indicated to ye scribe who eavesdropped that it was one of the best and most instructive ever held by the I & C Section. An "oscar" to the committee, please.

People are funny and get into funny businesses. In Atlanta there is a concern that puts up fried pigskin in ten cent pkgs. Giant gas-fired deep fat fryers make a delicacy out of what is kicked around thousands of gridirons every fall. They're awfully good too! We hate to think of what will happen to the football industry when their popularity becomes nation-wide.

Did you see that one in *Reader's Digest* about the tramp who begged a meal at a swanky restaurant and got it? On leaving, a Duncan Hines book was seen sticking out of his hip pocket. Nothing but the best for him—and by the way, best places cook with gas.

"Chuck" Eeles and his Heat Treating Committee are really *cooking with gas* this year. Two Information Letters ready to go and eight more in various stages of preparation. "Chuck" deserves a gold star on his Hall of Flame certificate. a.q.s.

Gas Stars at Western Metal Congress



Approximately a dozen gas equipment concerns cooperated in the comprehensive exhibit arranged by the Pacific Coast Gas Association at the Western Metal Exposition.

GAS figured prominently in the Western Metal Congress and Western Metal Exposition in Oakland, Calif., March 22-27. Numerous and steadily increasing uses of gas in various branches of the metal industries, especially newly-developed uses, were discussed in several of the more than 75 papers presented by outstanding scientists, research specialists, industrial experts and educators. In addition a large area of the Exposition space was devoted to exhibits of up-to-the-minute gas-fired equipment for industrial heating, heat treating and other operations in industry.

The Western Metal Congress and Western Metal Exposition, first since the war ended, brought to the west the latest developments of all the metal-working industries. The exhibits of more than 200 firms filled the entire floor area of the Oakland Civic Auditorium and adjacent Exposition Hall. Attendance was exceptionally large.

The gas displays, which occupied a considerable section of the Exposition Hall, were arranged by the Pacific Coast Gas Association and all the participants are members of that organization. The arrangements committee consisted of three San Franciscans—Clifford Johnstone, P.C.G.A. managing director; J. H. Gumz, manager of commercial and industrial sales, Pacific Gas and Electric Co., San Francisco; C. A. Blesch, manager, furnace division of the Natural Gas Equipment Company, San Francisco.

About a dozen gas equipment concerns cooperated in the comprehensive exhibit, showing late types of burners, furnaces, boilers, air heaters, controllers and other items. Several firms gave demonstrations of their equipment in actual operation.

In addition to the comprehensive display by equipment firms, the Pacific Gas and Electric Co. staged a large exhibit in the Civic

Auditorium stressing its widespread operations throughout an area of 89,000 square miles in Northern and Central California. The company publicized the fact that it now has 10,165 miles of gas pipelines serving 813,275 gas customers and used literature, photographs and colored slides to proclaim the advantages for new industries in Northern and Central California.

Among the papers presented at the Western Metal Congress were the following devoted entirely or partly to the use of gas:

Aluminum Castings—Roy Paine, Los Angeles, director of research, Aluminum Company of America; Brass and Bronze Castings—George Dreher, Los Angeles, national director, American Foundrymen's Association; Hardenability of Steels—Walter E. Jominy, Detroit, in charge of metallurgical research and physical chemistry research, Chrysler Corp.; Principals of Heat Treatment of Steels—E. E. Thum, editor of "Metal Progress" published by the American Society of Metals; High Temperature Metals—Francis B. Foley, Philadelphia, superintendent of research, Midvale Co.; Controlled Atmospheres—Henry M. Heyn, manager, Heat Treatment Division, Surface Combustion Co., Toledo, Ohio.

Canadian Gas Association Speeds Convention Plans

MEMBERS and friends desiring to attend the fortieth annual Convention of the Canadian Gas Association at the General Brock Hotel, Niagara Falls, Ontario, June 9-11, are requested to fill out the reservation cards they have received and mail immediately to the General Brock Hotel as accommodations are limited to 300 persons.

Technical Section

C. S. GOLDSMITH, Chairman

A. C. CHERRY, Vice-Chairman

A. GORDON KING, Secretary

Distribution Conference Sets Record



J. H. Collins, New Orleans (left) chairman, and H. W. Nicholson, Newark, vice-chairman, Distribution Committee

A RECORD gathering of 600 distribution engineers and motor vehicle fleet operators participated in the twenty-third annual Distribution Conference and sixth conference on the Operation of Public Utility Motor Vehicles held jointly April 14-16 at the Hotel Cleveland, Cleveland, Ohio. Sponsored by the Technical Section of the American Gas Association, the meetings explored problems of national and regional significance affecting virtually every phase of the distribution and transportation fields.

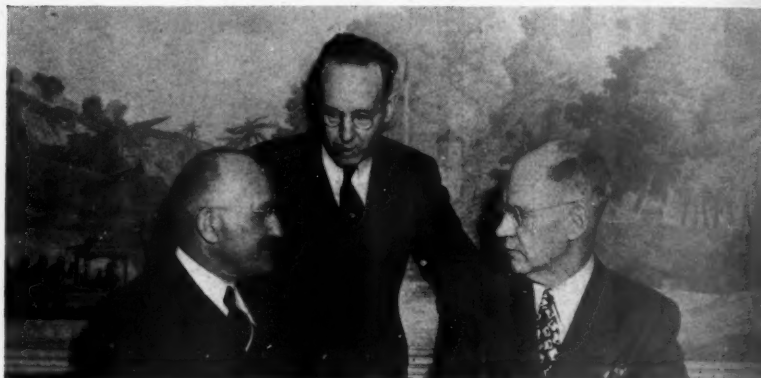
J. H. Collins, general superintendent, Gas Department, New Orleans Public Service

Inc., and chairman, A. G. A. Distribution Committee, and B. D. Connor, superintendent of transportation, Boston Consolidated Gas Co., presided at the meetings. They were assisted by H. W. Nicholson, Public Service Electric & Gas Co., Distribution Committee vice-chairman, and Jean Y. Ray, Virginia Electric & Power Co., chairman, Edison Electric Institute Transportation Committee, which cooperated in the motor vehicle conference.

It was made crystal clear at the conference that the distribution men face unprecedented

problems which must be solved before the gas industry can make further substantial progress. As the vital link between production and fast-growing markets, such as house heating, distribution systems must be prepared to handle greater loads, more economically than ever before.

Opening the first general session, Monday morning, Chairman Collins called attention to the sudden expansion of the gas house heating load and the increasing demands in the industrial and commercial fields. He expressed confidence that the pioneer spirit of



Left to right: E. W. Jahn, Baltimore; B. D. Connor, Boston, chairman, Motor Vehicle Committee; Linn Edsall, Philadelphia. Below: bird's-eye view of general sessions





Head table at General Luncheon, left to right: A. Gordon King, New York; H. W. Nicholson, Newark; C. S. Goldsmith, Brooklyn; Hudson W. Reed, Philadelphia; J. H. Collins, New Orleans; A. C. Cherry, Cincinnati; L. E. Knowlton, Providence; B. D. Connor, Boston; M. C. Alves, St. Louis, Mo., and H. B. Anderson, Philadelphia



R. A. Seifert



G. E. Hitz



E. L. Henderson



H. R. Redington

R. H. Bussard

R. J. Kuhn

Hugh Blain

A. W. Johnston, Jr.



T. C. Smith (left), W. R. Fraser (seated) and Karl Emmerling



T. J. Perry, Brooklyn; A. C. Cherry, Cincinnati; G. W. L. R. Travis, New York; T. A. Bradley, Kansas City

Delegates showed considerable interest in the plastic gas meter developed by an employee of Public Service Electric & Gas Co., Newark, N. J.

T. F. Smith (left) and C. L. O'Reilly, both of Boston, and J. M. Pickford (right), Gary, Ind.





Left to right: John Diehl, New York; O. C. Waters, Atlanta, Ga.; B. H. Elliott, Birmingham, Ala., and A. F. Benson, New York



Left to right: E. J. Crain, Rochester; D. J. Miller, Denver; C. J. Gregg, Bradford, Pa.; Chester Schlenker, Rochester, and C. D. Taft, Kansas City



Between Discussions: left to right, C. S. Goldsmith, Brooklyn; G. A. S. Cooper, J. A. Babcock and H. E. Haby, all of Newark, N. J., and C. J. Dodds, Lawrence, Kansas



George T. Overholt, New York; Jerome B. Burnham, Brooklyn; Carl F. Sucher, New Haven; D. M. Steem, Mircola, N. Y.; and Harry A. Grassman, Elizabeth, N. J.

E. C. Steele, Canada; S. L. Wolfe, Baltimore; Charles A. Kooke, Baltimore, and C. F. Sucher, New Haven



the American gas industry would successfully meet these challenges.

Karl Emmerling, general sales manager, The East Ohio Gas Co., welcomed the delegates to Cleveland and invited them to inspect the distribution facilities of the local company.

The distribution man's part in the future of the gas industry was clearly defined by the next speaker, H. Carl Wolf, managing director, American Gas Association, who called for new ideas, new thinking and new methods. Citing the current metamorphosis in gas production as exemplified by increased natural gas reserves, and newly publicized processes for converting coal to gas and other products, Mr. Wolf said the distribution machine must be enlarged and perfected to handle these products. He also foresaw higher unit costs which must be met by greater mechanization, better service and greater economy.

Both Chairman Collins' and Mr. Wolf's remarks were underscored by Hudson W. Reed, president, The Philadelphia Gas Works Co., and first vice-president, American Gas Association, who was the principal luncheon speaker on the following day.

Distribution Growth

In a forceful presentation, Mr. Reed contrasted past practice with present-day distribution conditions caused by revolutionary changes in appliance design and the characteristics of the house heating load. "One house heating installation," he said, "requires many times the quantity of gas per maximum hour that a single old-time domestic range required and this new demand is superimposed on the peak cooking load."

The distribution engineer must meet these new conditions, Mr. Reed continued, by changing his thoughts, his practices and often his personality. While well-grounded in established distribution practices, he must be prepared to discard those which are inadequate and he must have thorough knowledge of load characteristics, and as nearly as possible rate and extent of future growth. "It is not an easy job," Mr. Reed declared, "but the able distribution man can get the answer."

Mr. Reed also urged constant cooperation with the sales and production departments, pointing out that "no longer can the distribution department be considered a little kingdom in itself. Sales, distribution and production must today work hand in hand, not as individual departments as in the past."

Tribute was paid at the luncheon to the memory of the late Robert H. Clark, general superintendent of transportation of the Consolidated Edison Co. of New York, Inc., and chairman of the Program Committee for the Motor Vehicle Conference, who died unexpectedly on March 23. A resolution, drawn up by a special committee, calling attention to Mr. Clark's fine character and valuable contributions to the industry, was adopted by a unanimous rising vote.

Of special interest to the motor vehicle operators at the first general session on

Monday was a valuable talk on driver education by W. F. Brown, safety director, Consolidated Edison Co. of New York, Inc. Permanent accident reduction, he contended, does not come through spasmodic campaigns but only from a continuous, well-balanced safety program. He called the driver the key to the whole accident situation and outlined the practical selection and training program of Consolidated Edison.

The first session ended with a report on the Job Classification Plan of the Cincinnati Gas and Electric Co., by James A. Whelpley of that company. This plan has been well worthwhile, Mr. Whelpley stated because: "it eliminates intraplant inequalities; establishes a definite line of promotion; a set of wage rate schedules, and furnishes the employee with a clear understanding of the principal duties and requirements of the job to which he is normally assigned."

Further, he continued, "it eliminates from contract negotiations any tendency to place undue stress on any particular job classification or classifications."

The final general session was held Wednesday morning and opened with the presentation of a valuable report on "Installation of Gas Service Piping" by E. L. Henderson, United Gas Corp., Houston, chairman of the Subcommittee on Construction and Maintenance. Mr. Henderson summarized the results of a survey covering 117 gas companies operating 11.5 million service lines or more than one-half of the gas industry in the United States.

Practices vary widely even for companies operating under the same general conditions, the survey revealed, particularly in relation to shut-off valves on service lines. Steel pipe is used predominately for service lines throughout the industry, with copper being the next most popular material. About one quarter of the steel pipe is galvanized and most of the pipe is protected with a coating applied while hot.

Installation Practices

Service lines from the main distribution system are insulated by 20 companies operating more than three million service lines, Mr. Henderson said. Rubber couplings and fittings are used extensively in almost every part of the country. Welding on steel mains and tapping on cast iron mains are the most popular methods of connecting services.

C. S. Goldsmith, chairman of the Technical Section, and T. J. Perry, chairman of the Subcommittee on Work on Consumers' Premises, both of The Brooklyn Union Gas Co., led a lively and enlightening discussion of methods of conserving gas supplies during emergencies. Mr. Goldsmith outlined tentative procedures for reducing gas supply set up by an A. G. A. committee which covers such items as publicity, gas manufacture, curtailment to large consumers, shut-off of certain sections of territory, pressure reductions and restoration of service.

Mr. Perry discussed the domestic gas appliance operating experience of a number of companies following pressure drops, with

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A. G. A. Distribution Committee meeting during the three-day conference in Cleveland, to hear reports of committee developments and summaries of roundtable and luncheon conferences

particular reference to experiments conducted by The Brooklyn Union Gas Company. Laboratory experiments of the latter company where pressure was dropped one-half inches of water column at a time from five inches of water column at the meter inlet indicated that most domestic appliances would operate satisfactorily down to three inches of pressure. The ensuing discussion indicated that a gas system could absorb a low pressure period of short duration although a severe drop would cause hazardous conditions, especially in old appliances.

A résumé of service policies in the gas industry as brought out in the roundtable conference on Work on Consumers' Premises, with Mr. Perry as chairman, was presented by R. H. Bussard, Washington Gas Light Company. While there is general agreement about charging for replacement of appliance parts, Mr. Bussard stated that there is wide divergence between the charge for service and no-charge schools of thought. Those companies which give free service cite the safety factor, customer goodwill, promotional value and responsibility of seeing that gas is consumed properly as the reasons. Advocates of service charges called attention to the necessity for compensating for rising labor and materials costs plus the desirability of eliminating numerous unfounded service calls.

A unique feature of this conference was the enlargement of the traditional roundtable luncheon meetings with Monday afternoon and all-day Tuesday devoted to such meetings. As a result, a broader, more diversified group of topics was discussed and there was more participation from the floor than at any previous conference. The following round-table meetings were held:

Meters and Metering—R. A. Seifert, Cincinnati Gas and Electric Co., chairman.

Construction and Maintenance combined with Distribution Design and Development—Chairmen E. L. Henderson, United Gas Corp., Houston, and A. W. Johnston, Jr., Washington Gas Light Company.

Work on Consumers' Premises—T. J. Perry, The Brooklyn Union Gas Co., chairman.

Pipe Coatings and Corrosion—R. F. Hadley, Susquehanna Pipe Line Co., Philadelphia, chairman.

Motor Vehicle (reported elsewhere)

Results of these sessions were summarized Wednesday afternoon at the closing meeting as follows:

Safe Practices

J. F. Holmes, chairman, Safe Practices Subcommittee, reported that his group led safety discussions at three of the roundtable conferences. He led the discussion on "The Use of Personal Protective Devices in Meter Repair Shops" at the Meters and Metering Conference. H. M. Dwight, Southern California Gas Co., conducted a discussion on "Safety Practices by Contractors on Distribution Construction" at the Construction and Maintenance Conferences. A. W. Breeland, Lone Star Gas Co., Dallas, was safety discussion leader "Location of Service Regulators," at the conference on Work on Consumers' Premises. Safety displays were featured in the various meeting rooms.

Distribution Design and Development

Pressure control, system capacities and factors in distribution design received concentrated attention at the free-for-all discussion Tuesday morning. Principal paper presented at this meeting was on "Remote Pressure Control in Dallas" by L. A. Bickel, Lone Star Gas Company.

Mr. Bickel described how pressures have been remotely controlled for seven years by "push-button" in the intermediate high pressure distribution system serving 110,000 customers in Dallas. Connecting link between the remote points of pressure control and transmission and the central board are telephone pairs (wires) leased from the local telephone company on a monthly rental basis. The pressure control devices installed in the city gate stations consist of a transmitter and a controller which raises and lowers the pressures by means of a diaphragm motor valve connected to the city gate regulator.

This type of pressure control has been eminently satisfactory and the company has been experimenting with still other devices which have interesting possibilities, Mr.

Bickel reported. He concluded that remote pressure control systems are practical and have a definite future in the utility industry.

Construction and Maintenance

Further progress toward mechanization of construction and maintenance work was apparent at the lively roundtable discussions of this group. Three formal presentations emphasized this trend: the first by F. J. Hall, Michigan Consolidated Gas Co., on Light Weight Service Trenches, summarized the progress made to date in development of a thoroughly practical trencher for service installations. The second was an illustrated



J. R. North and A. Verock, Jackson, Mich.



Registering: Earl H. Hackman, Dayton; H. J. Chambers, Tulsa; Gilbert Estill, Tulsa; William S. Dillon, Troy, N. Y.; James Johnstone, Albany

talk by Mr. Thorson, The Peoples Gas Light and Coke Co., Chicago, covering the operation of power-driven augers for the installation of small pipe, the installation of copper tubing for service replacements, work in small openings, installations of leak clamps, locating leaks by precision methods, and the many ingenious tools used. The third equipment feature was a movie shown by Mr. Paul, Northern Indiana Public Service Co. illustrating methods of cleaning the insides of gas mains.

An interesting paper describing "The Application of Production Principles to Distribution Construction Work" was presented by H. W. Dwight, Southern California Gas Company. He reported that his company has substantially increased the output of men and crews by developing improved job methods and giving careful consideration to crew sizes and job planning.

Meters and Metering

The meter and metering conference brought out a variety of useful information, particularly in respect to the current labor and material situations. While the recent lifting of the ban against 50-50 solder has alleviated the meter repair problem, it was emphasized that the supply outlook is still critical but improving gradually.

In 1943, the stockpile of metallic tin was 141,000 tons, it was stated, while it is now only 16,000 tons. The Civilian Production Administration has directed that production of charcoal tin plate for meter construction be doubled for the second quarter of this year. Copper is still on the critical list, but the leather supply is improving and aluminum is plentiful although the price is rising gradually, the conference was told. Experience with aluminum meters indicates that they are meeting all previous expectations.

The new heat induction method of removing cases and tops from meters attracted considerable attention. One meter committee member reported that whereas it took the men from six to ten minutes to remove cases by hand, it is now done in from 15 to 60 seconds by the heat induction method.

It was decided that the meter committee will determine standard practice of analyzing

tests of domestic meters for possible use in connection with state commission regulations governing periodic changes of meters. It was also brought out that the A. G. A. has been supplying speakers at various meter schools throughout the country, and this practice was commended.

L. A. Dixon, Jr., Pittsburgh Equitable Meter Co., who recently made a trip to Europe gave an interesting talk on European meter shop practices.

Other topics discussed included: use of plastics in repairing meter seam leaks; possible uses of the new silicones as diaphragms or diaphragm dressings; the combination of the Vulcan diaphragm and carbon valve, and the possibility of lowering the meter index box to aid readability.

Pipe Coatings and Corrosion

Focal point of this discussion group was an interim report on "The Anodic Behavior of Sacrificial Metals in Specific Environments," prepared jointly by K. M. Wight, A. G. A. research associate, and Chairman R. F. Hadley. This paper, the second in a series, reports experiments designed to test the suitability of various types of "chemical backfills" for the sacrificial anodes. These "backfills" consisted of zinc, magnesium with six percent aluminum and three percent zinc, aluminum with five percent zinc and aluminum with ten percent zinc.

Primary purpose of this research was to perform laboratory experiments in order to select chemical environments suitable for in-

vestigation under field conditions, Mr. Hadley said, adding that field work would be undertaken later. The A. G. A. is working closely with the galvanic anodes committee of the National Association of Corrosion Engineers.

There was considerable discussion of the protection of gas services and the work being done to revise the Corrosion Handbook. The latter is expected to be ready within a year, Mr. Hadley indicated.

Work on Consumers' Premises

The opening session of this well-attended conference was featured by a visit to the A. G. A. Testing Laboratories where a demonstration of appliance developments since the war was inspected by the delegates. These developments were the basis of a valuable discussion of servicing and other problems which occupied the remainder of the session.

Under the leadership of Chairman Perry a cross section of service policies and practices of gas utilities in many parts of the country was presented. As noted previously, this material was summarized at the Wednesday morning session by Mr. Bussard.

Motion Picture

A color motion picture on Safe Practices in Distribution was the concluding feature of the conference. C. S. Goldsmith, chairman, A. G. A. Technical Section, presented a running commentary which effectively rounded out this phase of the program.

Sixth Motor Vehicle Conference Highlights

A ROUNDTABLE luncheon meeting on April 14 and vigorous exchanges of information on current problems opened the motor vehicle sessions which were sponsored jointly this year by the American Gas Association and the Edison Electric Institute. (The General Sessions paper on driver education presented by W. F. Brown, Consolidated Edison Co. of New York, Inc., is reported on a previous page.)

B. D. Connor, Boston Consolidated Gas Co., chairman, A. G. A. Committee on Motor Vehicles, officiated together with Jean Y. Ray, Virginia Electric & Power Co., Richmond, chairman, E.E.I. Transportation Committee. After welcoming the E.E.I. delegates, Mr. Connor greeted telephone company representatives attending as guests and pointed out that the main purpose of the motor vehicle meetings was to establish a common ground for the solution of public utility problems.

C. S. Goldsmith, The Brooklyn Union Gas Co., chairman, A. G. A. Technical Section, which sponsored the three-day conference, stated that he considers the motor vehicle group of equal importance with distribution, production and chemical groups in the Technical Section.

"Moreover," he added, "the part played by the motor vehicle group will become more important as labor costs increase."

A. C. Cherry, The Cincinnati Gas & Electric Co., vice-chairman, A. G. A. Technical Section, stressed the need for distribution-motor vehicle group teamwork. But the high spot on the luncheon program was the informal talk delivered by T. C. Smith, engineer, American Telephone and Telegraph Co., on "Adapting Automotive Equipment and Construction Apparatus to Service in a Public Utility."

Speaking from notes which he illustrated with slides, Mr. Smith discussed the rapid growth of public utility motor vehicle fleets emphasizing practical experience gained by his company. "At no time," he said, "has the need been greater for further construction and development of heavy automotive equipment."

The next speaker on the program was Sidney F. Gale, New Orleans Public Service Inc., chairman, Subcommittee on Truck Body Standardization, who presented an informal and interesting report on his committee's work to develop standardized body design which would provide minimum maintenance and lowest possible price features.

Do You Know

- The Greatest secret of production—is saving waste?
- The greatest mistake—is to resist change?
- The greatest hazard toward progressive thinking—is prejudice?
- The greatest comfort—is the knowledge that you are doing your job well?
- The greatest play—is your work?
- The greatest man—is the one who always does what he knows is right?
- The greatest field for success—is probably right where you are?

—The Bulletin

"The committee is attempting to get the ball rolling," he remarked, "by developing two or three standard designs to which others could later be added."

He described a standardized body which his committee had developed and placed on display in a nearby Cleveland garage. This model will be photographed, then placed in test service in New Orleans. Several larger models will also be built, he reported.

Delegates brought out some of their most burning problems at the all-day motor vehicle conference on April 15, with M. C. Alves, Union Electric Co. of Missouri, vice-chairman, A. G. A. Motor Vehicle Committee, presiding at the morning session, and J. R. North, Commonwealth and Southern Corp., Jackson, Michigan, presiding at the afternoon session.

Opening the conference, S. G. Page, Equitable Gas Co., Pittsburgh, presented an informative talk on depreciation as it refers to the economical replacement of utility vehicles. He divided the involved factors into depreciation expense and maintenance expense.

Following Mr. Page's talk the delegates took out their individual notes and under the careful presiding of Mr. Alves and Mr. North discussed a long list of motor vehicle questions and topics selected by the program committee. These included shop lighting, transportation of crews, cleanliness, compressors, new garage equipment, installation and operation of two-way radio, use of detergent oil and oil filters and numerous other topics of vital interest to gas and electric motor vehicle groups.

Before time finally ran out and brought the meetings to a conclusion delegates traded the results of many years' experiences with utility motor vehicles.

Safety Tour Planned

TALKS by safety experts and safety directors, plus two motion pictures, will attract several hundred public utility safety men and women to the seventeenth annual Michigan Safety Conference which opens in Detroit May 20.

A feature of the Public Utilities program will be specially conducted tours of Detroit utility companies—the Detroit Edison Co., the Michigan Bell Telephone Co., the Michigan Consolidated Gas Co., and the public works, water supply and lighting departments of the City of Detroit.

Fred W. Bagnall, Detroit Edison Co., and Public Utilities Division chairman, announces that General Motors Corp. has provided two films, "The ABC's of Hand Tools," and "The Other Fellow." Dr. Frederic B. Knight, director of education and applied psychology, Purdue University, will speak on "The Strong Links in Human Behavior that Cause Accidents." Other speakers include J. C. McMonagall, director of planning and traffic division, Michigan Highway Department, and John M. Roche, industrial department manager, National Safety Council.

The Chinese discovered and used natural gas more than 2,000 years ago.

Broad Program Announced for Joint Chemical and Production Conference

DETAILS of the program for the American Gas Association's Joint Production and Chemical Committee Conference at the Hotel New Yorker, New York, June 2-4, were worked out at a meeting of the two committees of the A. G. A. Technical Section, April 25, and advance programs are now being distributed to the Association membership.

C. S. Goldsmith, Technical Section chairman, and S. Green and W. R. Fraser, chairmen respectively of the Gas Production and Chemical Committees, have constructed the interesting agenda around the framework of general sessions and popular roundtable luncheon conferences.

At the opening general sessions on June 2, Dr. A. R. Powell, associate director of Research, Koppers Co., Inc., Pittsburgh will deliver an address on Future Possibilities in Methods of Gas Manufacture, followed by delivery by Dr. J. G. King, director, of greetings from The Gas Research Board, London, and a report on the program of the Gas Production Research Committee.

Symposia on Tar and Interchangeability of Gases will be included among features of the afternoon meeting. In another highlight a representative of the Institute of Gas Technology, Chicago, will discuss the Catalytic Reforming of Hydrocarbons. The next morning delegates will hear a talk by Hudson W.

Reed, president, The Philadelphia Gas Works Co., and first vice-president, American Gas Association, and a number of other speeches on timely subjects.

One of the highlights of the final general sessions on June 4 will be an address on Conservation of Production Resources by Dr. William F. O'Connor, professor of Safety Engineering, College of Engineering, New York University, under the auspices of the A. G. A. Accident Prevention Committee (H. T. Jayne, chairman, The Philadelphia Gas Works Company).

Oxygen is an ever-live topic for discussion and three up-to-the-minute presentations will be made on this subject. Dr. J. Henry Rushton, director, Department of Chemical Engineering, Illinois Institute of Technology, Chicago, will discuss Use and Production of Oxygen; Dr. C. C. Wright, State College, Pa., and L. L. Newman, Bureau of Mines, Washington, D. C., will discuss Oxygen Gasification of Anthracite in the Wellman-Galusha Producer, and E. S. Pettyjohn, director, Institute of Gas Technology, Chicago, will cover the Possibilities of Applying German Experiences with Oxygen to American Gas Production Methods.

Roundtable luncheon topics on June 3 will include: Carbonization and Coke, Chemistry in the Gas Industry, High B.t.u. Gas, and Water Gas Operation.

THE IMPORTANCE OF FILLING VACATION VACANCIES

A special summer message prepared by P. A. Alberty, The Ohio Fuel Gas Co., for the A. G. A. Committee on Accident Prevention (H. T. Jayne, chairman, The Philadelphia Gas Works Co.) strikes home to all foremen charged with assigning personnel to jobs during the vacation absence of regular operators, and is therefore outlined below.—Ed. Note.

"With approach of the summer vacation season, supervisors are confronted with the serious problem of filling temporary vacancies. Of utmost importance is the consideration and selection of well-equipped employees to fill these temporary positions. But all too frequently this selection is not properly handled. Even though the temporary job is for a short period, the work must be done accurately and selection of candidates should not be made without careful checking and training.

"Workmen with long service records sometimes are given credit for more operational knowledge than they actually possess. Even though they have worked close to or on the jobs, minute supervision may have been lacking. Machines or appliances that are alike sometimes develop "quirks" that require special watching. So—foremen—when transferring an employee to fill a vacation vacancy, be careful and consider these factors. Better still, train several capable employees to fill temporary vacancies. Preparation well in advance can prevent unexpected occurrences—ACCIDENTS."



Laboratories

ARTHUR F. BRIDGE, Chairman

R. M. CONNER, Director



D. E. Hutchisson

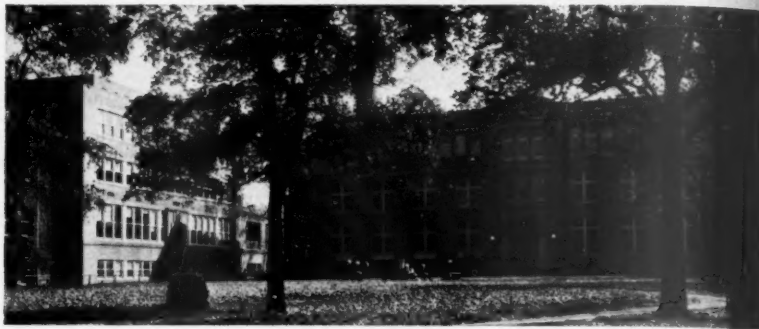
A COOPERATIVE plan for graduate study between the American Gas Association Testing Laboratories and Case School of Applied Science has been inaugurated and announced by R. M. Conner, director of the Laboratories, and Dean Elmer Hutchisson of Case School.

The new arrangement will make it possible for employees of the Laboratories to obtain advanced training in science and engineering while continuing their regular research activities on a full-time basis and will help them fulfill the formal requirements for a Master's or Doctor's degree in science or engineering.

Under the plan Laboratories employees may obtain advanced degrees from Case School of Applied Science by taking lecture and laboratory courses given by the school and successfully completing research at the Laboratories which will provide thesis credit. Employees will work under a faculty adviser after outlining their proposed program and securing its approval by the head of the department at Case School in which the work towards an advanced degree will be taken, and by the Dean as well as by the Chief Research Engineer of the Laboratories. Research at the Laboratories will be undertaken as part of the employee's regular duties under supervision of the Laboratories staff and in addition will be supervised by a Case faculty member in the capacity of consulting supervisor.

For the Master's degree, candidates from the Laboratories will be required to complete a minimum of 21 credit hours on the Case campus with nine hours' credit allowed for an acceptable thesis indicating capability of carrying on original and individual research. For the Doctor's degree the same general principles apply with 60 hours of basic courses required on the Case campus and a thesis credit of 27 hours. Under the curriculum as now arranged these courses are available through evening classes.

Graduate Study for Laboratories' Staff



New chemistry and mechanical engineering buildings on the campus of Case School of Applied Science where A. G. A. Laboratories' employees will undertake graduate study while continuing their regular research activities

The plan is expected to tie in directly with a number of research projects sponsored by various research committees of the American Gas Association. Qualified Laboratories employees thus will be able to obtain partial credit towards an advanced degree for work conducted as part of their regular duties. Upon completion of research an approved Laboratories report may constitute

the student's thesis although the faculty supervisor may outline any additional work should he believe any to be necessary for thesis credit.

Commenting upon the plan, Dean Hutchisson expressed his pleasure at establishment of the joint undertaking and stated he is looking forward to resulting closer ties with the Laboratories as the program develops.

Three A. G. A. Technical Studies Completed

THREE new publications have been issued by the American Gas Association Testing Laboratories on Technical subjects related to the Association's Domestic Gas Research Program. Subjects covered are noise of extinction of large burners (see feature article in this issue), bimetallic thermal elements and domestic hot water service from gas-fired boilers.

The first is included in Research Bulletin Number 41, Research in Fundamentals of Noise of Extinction of Large Gas Burners, reporting studies supervised by the Technical Advisory Group for Burners, Controls and Accessories of the Domestic Gas Research Committee. The bulletin presents design relationships fundamental to minimizing noise of extinction in contemporary types of large burners operated on manufactured gas and includes factors affecting intensity of noise of extinction.

Effects of aerated blue and non-aerated yellow pilot flames on temperatures of flat strip bimetallics under varying operating conditions are presented in Research Bulletin Number 42, A Study of Bimetallic Thermal Elements. The magnitude of permanent deformation under various loads is discussed as are results of interviews with bimetal manufacturers in the field. The investigation was supervised by the Technical Advisory Group for Domestic Water Heating Research.

The domestic hot water service publication has been issued as Laboratories Report

1060-B, Field Study of Domestic Hot Water Service from Gas-Fired Boilers and describes the various types of equipment which have been interconnected with domestic hot water supply in order to supply year-round hot water service. Opinions of householders, gas utilities, service men, sales personnel and gas equipment manufacturers are summarized. The study was sponsored by the Technical Advisory Group for Central Gas Space Heating Research.



Determining deflection characteristics of bimetallic strips

Personal and Otherwise

Quinn Promoted By Boston Consolidated



John J. Quinn

JOHN J. QUINN, general sales manager of the Boston Consolidated Gas Co. since 1937, has been named vice-president, according to E. M. Farnsworth, president.

Mr. Quinn came from the presidency of the Citizens' Gas Light Co., Quincy, to the Boston company in 1930 as assistant to the vice-president in charge of sales. In 1937 he became general sales manager. His first employment in the gas industry was at Pittsfield, Mass., where he was located until coming to Quincy in 1919.

Mr. Quinn has served as chairman or member of many committees of the American Gas Association and is at present chairman of the Association's domestic copy committee on national advertising. He is a past-president of the New England Gas Association and the New England Guild of Gas Managers.

He is married, has four children and makes his home at 15 Glendale Road, Quincy, Mass.

Martin Heads Heater Sales

CHARLES C. MARTIN, a veteran of 19 years in the plumbing and appliance field, has taken over the position of sales manager with Hoyt Heater Co., Los Angeles. His ground floor experience includes ten years with Airway Electrical Appliance Corp., Toledo, six years with General Electric Appliance Corp. and three years as vice-president and general manager of Rheem Research Products, Inc., subsidiary of Rheem Mfg., Los Angeles.

Mr. Martin is filling the spot held by Arthur Dolan, Hoyt Heater's sales manager, 13 years with the firm, who recently purchased and will personally operate San Gorgonio Lodge, 17 miles from Redlands, Calif.

Boyer Honored with Walton Clark Medal



E. G. Boyer

EDWARD G. BOYER, manager of the gas department, Philadelphia Electric Co., was awarded the Walton Clark Medal of the Franklin Institute, Philadelphia, at the Institute's annual Medal Day ceremonies on April 16. He was honored for his "notable improvements in the develop-

ment of processes for reforming hydrocarbon gases and for his improved and simplified methods for calculating the required composition of interchangeable gas mixtures and for his other valuable contributions to the gas art."

Mr. Boyer has held a number of official positions with the American Gas Association and as a member of the A. G. A. Gas Production Research Committee is presently engaged in experiments directed toward finding more economical methods of producing gas.

He has been associated with the gas business for 35 years since he first went to work for The United Gas Improvement Company

of Philadelphia. From 1914 to 1918 he worked in the manufacturing department of the Hammond Plant of the Northern Indiana Gas and Electric Company. In 1918 he joined the Consumers Gas Co., Reading, Pa., and six years later was made superintendent of the gas department of the Counties Gas and Electric Co., Norristown, Pa., which was later merged and in 1929 incorporated into the Philadelphia Electric Company. In 1930-31, he was president of the Pennsylvania Gas Association.

Under his leadership, the Philadelphia Electric Company's gas department has pioneered in development of a process for reforming hydrocarbons. This work has resulted in more than doubling the capacity of gas production equipment and has increased efficiency and economy of operation. Many features of this development have been adopted by the remainder of the gas industry, with substantial benefits. To meet wartime peak loads, Mr. Boyer directed research by his department on mixing gases which work provided methods for adequately supplying peak demands without excessive costs. Today fast-burning and slow-burning component gases are manufactured and expertly blended to assure maximum efficiency in appliance operation. These advances have been widely followed by the gas industry.

Rochester Gas and Electric Promotions

EDGAR R. CROFTS, vice-president in charge of electrical operations at the Rochester Gas and Electric Corp. for the past three years, has been appointed head of all operations, electric, gas and steam. Under his direction have also been placed the purchasing, engineering and maintenance departments.

Mr. Crofts has been with the local utility for more than 30 years, entering the firm's employ a few years after graduating from Cornell. After filling various posts including that of purchasing agent, he became general superintendent of the Electrical Department. In 1944 he was made vice-president in charge of electric operations.

Promotions affecting six other R. G. & E. executives are announced by President Alexander M. Beebe.

Leo H. East, superintendent of gas distribution, becomes general superintendent of the Gas Division and will, in addition, have supervision of the Coke and Transportation Departments. Mr. East joined R. G. & E. in 1923 while still a student in mechanical engineering at the University of Rochester and, except for a period when he returned to college to complete his course, has been associated with the utility ever since. In 1942 Mr. East entered the Army Air Forces and served two years in Europe with the rank of Major. He was placed on inactive duty in November

1945 and returned to R. G. & E. at that time.

Richard E. Kruger, superintendent of gas production, becomes superintendent of gas operations, including manufacture, distribution and research. He came to the local utility in 1916 following his graduation from the University of Rochester and helped to build the present West Gas Station where he was superintendent for some years.

Fred Pfluke, former superintendent of West Gas Station, becomes superintendent of the Gas Manufacturing Department. He came to R. G. & E. from the University of Michigan in 1921 where he was graduated with the degree of electrical engineer.

Linn Bowman, former superintendent of East Gas Station, becomes Assistant Superintendent of Gas Manufacturing. He came to the company after graduation from Cornell in 1925.

Calvin Brown, a graduate of Michigan State College, who began his career with the company in 1927 in the chemical laboratory, has been promoted from assistant superintendent to the superintendent of Gas Distribution.

Donald R. MacCollum, a graduate of the University of Michigan, who has been with R. G. & E. since 1935, succeeds Mr. Brown as assistant superintendent of gas distribution. He was formerly engineer of Gas Distribution.

Porter Resigns from Appliance Firm



G. Rogers Porter

GROGERS PORTER, prominent in Pacific Coast appliance circles for many years, has resigned as regional manager of Roberts & Mander Corp., and will relinquish charge of the company's San Francisco office effective May 31.

Porter is probably best known for his Western market analyses and active leadership in establishing the trade practices which give the West its present high reputation in the nation's home appliance market.

Porter introduced the "Quality" line to the San Francisco area on the company's factory-to-dealer policy in January 1946, opening the regional office shortly thereafter in the Western Merchandise Mart. The manufacturer's San Francisco office will remain temporarily under the guidance of Marvin F. Boss, the company's Southern California representative.

A. J. Campbell Retires From Connecticut L. & P.

THE following organization changes in The Connecticut Light and Power Co., Hartford, have been announced by C. L. Campbell, president, following a special meeting of the board of directors.

The Board reluctantly accepted the retirement of A. J. Campbell, vice-president. Paul R. Fleming, formerly secretary and treasurer, was elected a vice-president and will also continue as secretary.

J. M. Kramarsik, formerly assistant secretary, was appointed treasurer and L. E. Reynolds, formerly auditor and assistant treasurer, was made comptroller and assistant secretary.

Mr. Campbell, commenting on the retirement of A. J. Campbell, stated that the Board accepted his decision to retire, after more than 35 years of distinguished service with the company and its predecessors, with greatest reluctance.

Cribben & Sexton Coordinates Sales

REORGANIZATION of the sales department of Cribben & Sexton Co. announced by Harold E. Jalass, general sales manager, divides the country into sales divisions, so that better coordination and control can be placed upon the sales of Universal Gas Ranges. Numerous territory changes and new appointments have been made.

Fred F. Lauer, operating out of Newark, N. J., as Eastern Division Manager, will di-

rect all company activities from Maine to Florida. Eleven states in the North-Central part of the country have been assigned to John F. Schellenberg, Central Division Manager, with headquarters in Chicago. Metropolitan Chicago, formerly handled by Mr. Jalass, is now under the direction of Frank H. Goetz who was transferred from Michigan. Pittsburgh, Denver and Kansas City sales areas have not been placed under division managership but will continue to be operated under the direct supervision of Mr. Jalass.

Jean Thompson Joins A. G. A. Publicity Bureau



J. C. Thompson

JEAN CLARKE THOMPSON has been appointed to the Publicity Bureau at American Gas Association Headquarters and will work on domestic gas equipment publicity under the direction of George A. McDonald, publicity director.

Miss Thompson was recently an account executive with

Palmer Bevis, Inc., Public Relations Counsel, New York, handling trade association and industrial and consumer publicity and promotion.

During the war years she directed all publicity for the three plants of The Dayton Rubber Manufacturing Co. Her previous experience has covered consumer publicity, promotion and editing in both the United States and Canada.

She was educated at McGill University and the University of Toronto and brings to her new job a thorough background knowledge and experience of consumer and industrial publicity problems.

Two Appointments By Mueller Furnace

APPPOINTMENT of C. L. Hewitt, Jr., as general sales manager and R. Dean Hearne district sales manager for Wisconsin (including Milwaukee) is disclosed by Harold P. Mueller, president of the L. J. Mueller Furnace Co., Milwaukee.

Mr. Hewitt has returned to the company after an absence of nearly five years. Prior to that time he was Eastern Sales Manager for more than 20 years. During the past year, he was manager of sales, Heating Equipment Department, Rheem Manufacturing Company.

Mr. Hearne joins the Mueller Organization with a background of more than ten years of heating and air conditioning experience. In both Middle West and East he has sold and engineered all types of residential and industrial installations for all fuels.

Doran New District Manager



James F. Doran

ROBERTS & MANDER CORP., Hatboro, Pa., has announced the appointment of James F. Doran, as district manager for Metropolitan New York, New York State and New Jersey.

Mr. Doran has been the firm's Quality sales representative for New Jersey for over 15 years and

will assume his new duties with a broad understanding of the market. His main objective will be the direction of his company's expanding promotional plans in his district. Mr. Doran succeeds John H. Emery, recently appointed vice-president and sales manager.

Home Service Director



Ardis Hubbs

APPPOINTMENT of Ardis Hubbs, former dietetics instructor at Iowa State college, Ames, as director of the Home Service Department of the Minneapolis Gas Light Co., has been announced by Harry Wrench, president.

Graduate of the University of Illinois in 1939 with a major

in home economics, Miss Hubbs received her dietetic internship at Harper hospital, Detroit. Completing her internship, she remained at the hospital as a staff dietitian from July, 1940, until August, 1943. At that time she went to Iowa State college as instructor for the Navy Cooks and Bakers School. When that wartime project closed, she was transferred to the college's foods and nutrition department staff, teaching dietetics to senior students and also serving as dietitian at the college hospital.

Miss Hubbs is a member of the American Dietetic association and the American Home Economics association.

Campbell Receives Medal

HARRY J. CAMPBELL, auditor in the Distribution Department of The Philadelphia Gas Works Co., has been honored with the McCarter Medal for the successful resuscitation while he was off-duty on September 30, 1946 of a person overcome by gas. The award was made at a staff meeting March 24, and Mr. Campbell was introduced to President Hudson W. Reed by H. B. Anderson, vice-president in charge of distribution.

American Stove Makes Ginn a Director



Lloyd C. Ginn

From 1923 to 1930, he served the firm's New Process division in Cleveland and New York. From 1930 he worked in Atlanta as sales supervisor and manager. In 1936 Mr. Ginn was appointed sales promotion manager, a position he still holds along with his advertising responsibilities.

Mr. Ginn is chairman of the Domestic Range division of Gas Appliance Manufacturers Association and a member of seven committees of American Gas Association and Liquefied Petroleum Gas Association.

Milwaukee Gas Light Adds Directors

STOCKHOLDERS of the Milwaukee Gas Light Co. have added three new members to the board of directors at the annual meeting. They are: William G. Woolfolk, chairman of the American Light & Traction Co.; Ralph T. McElvenny, vice-president of the American Light & Traction Co. and assistant to the chairman, and J. A. B. Lovett, president of the Milwaukee Solvay Coke Co.

At the directors' meeting which followed present officers of the company were re-elected and Mr. Lovett was named to the new position of executive vice-president.

Officers renamed are: President—Bruno Rahn; vice-president in charge of sales—Bernard T. Franck; vice-president in charge of operations—Erwin C. Brenner; secretary-treasurer—Louis T. Smith; assistant secretary-treasurer—Paul J. Imse; assistant secretary—Robert Johnson, and assistant secretary—Thomas M. Leahy.

Five Gas Men Are Cited

A McCARTER Bar, two McCarter Medals and two Certificates of Recognition were awarded April 2-3 to employees of Public Service Electric & Gas Co., Newark, N. J., for outstanding acts of life saving or assistance.

William L. Heuser, general foreman, Street Department, Newark Gas Distribution Department, was presented the McCarter Bar by James N. Killgore, engineer of distribution, Essex Division. The Bar is presented to a utility company employee who for the second time successfully resuscitates a per-

son overcome by gas. Joseph Pisauro, caulker in the Newark Distribution Department, received a Certificate of Recognition from John M. Orts, Director of Safety Education, for assisting Mr. Heuser.

A McCarter Medal was also presented to Harry F. Voss, fitter in the Newark Gas Distribution Department by Mr. Killgore and to John Ellaks, special fitter, North Park Street, Gas Distribution Department, by Henry W. Nicholson, general superintendent of Gas Distribution. Andrew Samuel Uren received a Certificate of Assistance from Mr. Killgore for his part in the latter resuscitation.

Levine Appointed Managing Engineer



S. J. Levine

Division is a part of the General Electric Air Conditioning Department. In this capacity, he will have responsibility for both engineering and manufacture of all General Electric automatic heating equipment.

Mr. Levine is well-prepared for his increased responsibility. He received his B.S. and M.S. degrees from M.I.T., completing his studies in 1930, and was connected with the Research Laboratory in Schenectady, N. Y. and with the company plants in West Lynn, and Pittsfield, Mass.

Recognized as one of the country's leading technicians in gas boiler and furnace design, Mr. Levine has for some time been an active member of the American Gas Association Technical Advisory Group for Central Gas Space Heating Research of the Committee on Domestic Gas Research. He is a specialist in problems of heat transfer, and is Project Sponsor for the Association's project DGR-1-CH "Research in Fundamentals of Heat Transfer in Central Gas Space Heating Furnaces," which is being carried on at the A. G. A. Testing Laboratories. This project is directed at determining fundamental laws governing heat transfer to and through gas furnace heating element surfaces exposed to direct radiation from burner flames.

New Bryant Representative

DUDLEY & GARLAND, newly formed Boston sales engineering firm, has been appointed New England representative of the Industrial Division of Bryant Heater Co., Cleveland.

Cushman Joins "Monthly"



J. A. Cushman

ing newspaper in Hartford, Conn., following prewar experience as city reporter on the same paper.

The new managing editor is a graduate of Trinity College, Hartford, and Trinity School, New York, and edited publications at both those institutions. His background includes publicity and advertising agency experience and insurance underwriting. During the war Mr. Cushman served with the rank of first lieutenant as fighter control officer with the Ninth Air Force in France and Germany.

James M. Beall continues as editor of the MONTHLY.

Bendix Aids Architects

AS an aid to architects and builders in fulfilling a growing demand for planned home laundries, Bendix Home Appliances, Inc., has published an "Architects Handbook," reportedly the first of its kind in this field, which will be available through the manufacturer's 79 distributors.

Obituary

JOHN H. WARNICK, engineer in the Gas Department of the Philadelphia Electric Co., died on March 17, 1947 following an extended illness.

Mr. Warnick was born in Philadelphia, September 26, 1885, educated in the public schools and graduated as a Mechanical Engineer in the 1907 Class at the University of Pennsylvania.

Immediately after graduation, he became associated with various United Gas Improvement Company subsidiaries. As operating engineer he travelled extensively throughout this country, specializing in the efficient operation of water gas sets. Later he was employed by the Duquesne Light and Power Co., Pittsburgh, and in 1929, by the Philadelphia Electric Company.

Active in the American Gas Association and the Pennsylvania Gas Association, Mr. Warnick made friends throughout the utility industry.

He is survived by his widow, Isabel, two sons, John and Robert, and a daughter, Jean.

Associated Organization Activities

Midwest Gas Association Elects Officers

E. J. OTTERBEIN, Iowa-Illinois Gas and Electric Co., Davenport, Iowa, was elected president of the Midwest Gas Association at the group's annual convention held in Omaha, Nebraska, April 7-9. Other new officers are: first vice-president—**A. C. Rathkey**, Iowa Public Service Co., Waterloo; second vice-president, **Lester J. Eck**, Minneapolis Gas Light Co.; reelected secretary-treasurer—**R. B. Searing**, Sioux City Gas & Electric Company.

More than 300 gas men from the territory attended the meeting which was highlighted by the presentation of Certificates of Merit to approximately 30 past-presidents of the Association by George H. Smith, Assistant Managing Director and Director, Natural Gas Department, American Gas Association.

At a meeting of the executive council held during the Convention, plans were made for the twenty-fourth annual Gas School Conference to take place in connection with the Engineering Extension Department of Iowa State College, Ames, Iowa, September 8-10, 1947. As was the custom prior to World War II, it is planned to include manufacturers' exhibits as a part of the conference. All manufacturers interested in making ex-

hibits at this meeting should contact Professor D. C. Faber, Engineering Extension Service, Iowa State College, Ames, Iowa.

The following were named to represent the Midwest Gas Association on A. G. A. managing committees: Technical Section—**Amos H. Abbott**, Northern States Power Co., Minneapolis; Accounting Section—**D. W. Peterson**, Minneapolis Gas Light Co.; Residential Section—**J. T. Schilling**, Iowa Power and Light Co., Des Moines; Industrial and Commercial Gas Section—**D. J. Reimers**, Minnesota Valley Gas Co., St. Peter. **Elmer J. Worthman**, Sprague Meter Co., Davenport, Iowa, will represent the Midwest Gas Association in the Gas Appliance Manufacturers Association.

A feature of the general meeting on April 7 was an informative address by **Robert W. Hendee**, second vice-president, American Gas Association, and chairman, A. G. A.

Natural Gas Department, entitled "Natural Gas Looks Ahead." At the general meeting the following day **George H. Smith**, A. G. A., delivered a talk on New Gas Consuming Appliances. At the April 9 general meeting **John A. Robertshaw**, first vice-president Gas Appliance Manufacturers Association, gave an interesting speech entitled, "The Economics of the Gas Industry."

Included at a sectional meeting on April 7 was a combined presentation by **H. Vinton Potter**, A. G. A. New Freedom Gas Kitchen Bureau, and the Kitchen Planning Department of **Servel, Inc.**, treating the New Freedom Gas Kitchen as a Merchandising Vehicle. Another program highlight at a sectional sales meeting on April 8 was a talk by **Jim Gorton**, "CP" Promotional Director, Gas Appliance Manufacturers Association, on the subject, "Is the 'CP' Range the Answer to Our Competitive Cooking Problem?"

Robertshaw Elected President at Annual G. A. M. A. Meeting

JOHN A. ROBERTSHAW, president of the Robertshaw Thermostat Company, Youngwood, Pa., was elected president of the Gas Appliance Manufacturers Association at the association's twelfth annual meeting in Chicago, April 14-16. Mr. Robertshaw succeeds **D. P. O'Keefe**, president of O'Keefe & Merritt Co., Los Angeles.

Frank J. Hoenigmann, executive vice-president of Florence Stove Co., Chicago, was elected first vice-president of the association; **Frank J. Nugent**, general manager of appliance sales for Rheem Manufacturing Co., New York, was named second vice-president and **John Van Norden**, secretary of the American Meter Company, New York, was re-elected treasurer.

An enlarged statistical and fact-finding program by the association to provide manufac-



John A. Robertshaw



F. J. Hoenigmann

turers with a yardstick for measuring sales potentials and sales performance, was announced by **H. Leigh Whitelaw**, managing director. Sales of gas appliances will be broken down for the major trading areas in the United States and reported quarterly with the figures to include certain types of units, such as liquefied-petroleum appliances, not studied previously.

Manufacturers turned out an all-time high of 1,300,000 gas-fired water heaters during 1946, and manufacturers produced 1,800,000 gas ranges, an 80 percent increase over 1945 production but still short of 1941's all-time high, Mr. O'Keefe told the 200 delegates attending.

Discussing prospects for 1947, manufacturers were chiefly concerned lest shortages of steel and other raw materials continue to hamper production. Last year, these shortages helped prevent full use of production facilities now approximately 100 percent greater than in 1941. Increasing labor and raw material costs and restricted home building programs also are continuing to prevent full production, manufacturers declared.

Gas range manufacturers went on record as



E. C. Deane (center) congratulates **E. J. Otterbein**, his successor as president of the Midwest Gas Association. Other new officers are **A. C. Rathkey**, first vice-president (left), **L. J. Eck**, second vice-president, and **R. B. Searing** (far right) reelected secretary-treasurer

unanimously urging the immediate repeal of excise taxes on cooking, water heating and refrigerating appliances, pointing out that gas ranges for instance, should not be considered as a taxable luxury and that such taxes constitute an unnecessary burden on the veterans' housing program.

An increase in the proportion of gas ranges being built to "CP" standards was reported and attributed to dealers' desire to promote higher grade appliances, to realization by utility executives that automatic appliances must be promoted aggressively, and to increased "CP" promotional activities.

R. H. Hargrove, president of the American

Gas Association, told delegates that "a billion dollars worth of gas construction work" is awaiting availability of materials because shortages of steel prevented extensive construction of new pipelines during 1946. The American Gas Association was requested by appliance manufacturers to advertise the fact that there is no current shortage of gas but rather a shortage of gas distribution facilities.

Thirty-one new members were accepted into the association at the meeting, bringing total membership to 462 manufacturing organizations producing 90 percent of all gas appliances and equipment manufactured in the U. S. and Canada.

ings to discuss many of the technical and promotional phases of the various operating companies' activities. Panel discussions covered sales, operating, accounting, industrial and commercial problems.

Two educators were honored with life memberships at the final general session. Dr. Frank H. Dotterweich, Texas College of Arts and Industries, and W. H. Carson, University of Oklahoma, were thus singularly honored at the luncheon meeting "in recognition of their contribution to the progress of the gas industry in the South."

Charles I. Francis, Houston attorney, reported on the industry's fight to restrict federal controls over production and distribution of natural gas within state boundaries. He said excessive controls had discouraged new exploration and development and bred wasteful practices because of low rate schedules fixed by the F.P.C.

Other speakers at the Friday session were W. H. Senyard, Louisiana Power and Light Co., New Orleans, who discussed labor relations and A. von Wening, A. O. Smith Corp., Milwaukee, who presented a survey of the nation's business outlook.

Speakers at the sectional meetings included Charles W. Person, A. G. A. advertising director, who gave a colorful pictorial presentation of the national gas advertising program; H. Vinton Potter, New Freedom Gas Kitchen director, who described the new certification program under his direction; John J. Bourke, director of the recently-launched A. G. A. commercial cooking promotional program, and J. W. Lea, Atlanta, chairman, A. G. A. Domestic Range Committee, who spoke on "Automatic CP Performance." H. Leigh Whitelaw, managing director, Gas Appliance Manufacturers Association, gave a summary of the appliance situation at the Friday sales section meeting.

M. H. North, Tulsa, chairman of the General Convention Committee, and his co-workers received high praise for the character and scope of the convention which was hailed as the most successful in S. G. A. history.

W. U. A. Elects Officers

ERWIN C. BRENNER, vice-president in charge of operations, Milwaukee Gas Light Co., has been elected president of the Wisconsin Utilities Association for the fiscal year beginning May 1 by mail ballot. Other officers elected were: vice-president—W. E. Schubert, vice-president and general manager, Wisconsin Michigan Power Co., Appleton, and reelected treasurer—Alfred Gruhl, research engineer, Wisconsin Electric Power Co., Milwaukee.

International Gas Union

THE Council of the International Gas Union is meeting in Brussels, May 6 and 7 at the invitation of the Association des Gaziers Belges. The agenda includes a general business meeting, reports of delegates of member organizations and decisions of Council regarding these reports.

Southern Gas Convention Outstanding



New officers of Southern Gas Association. Left to right: W. H. Ligon, Nashville, first vice-president; W. Lee Woodward, Alva, Okla., president; L. L. Dyer, Dallas, treasurer; L. L. Baxter, Fayetteville, Ark., second vice-president

THE southern gas industry demonstrated tremendous vitality and resourcefulness at the thirty-sixth annual convention of the Southern Gas Association which attracted a record attendance of 1000 delegates to Biloxi, Mississippi, last month. Preceded by a Home Service Workshop and a Southwest Personnel Conference, and sectional forums on Wednesday, April 16, the convention proper was held Thursday and Friday, April 17 and 18, at the Buena Vista Hotel.

W. Lee Woodward, president, Zenith Gas System, Alva, Okla., was elected president of the Association for the coming year. Other new officers are: first vice-president, W. H. Ligon, president, Nashville Gas and Heating Co., Nashville, Tenn.; second vice-president, L. L. Baxter, president, Arkansas Western Gas Co., Fayetteville, Ark.; and treasurer, L. L. Dyer, comptroller, Lone Star Gas Co., Dallas.

Retiring S. G. A. President Dean A. Strickland, United Gas Corp., Houston, who presided at the opening general session, declared that ever-rising costs of production and distribution and the challenge of competition demand closer cooperation by individual units of the gas industry. He added that continu-

ous research to widen the fields of gas use is a necessity.

The association's annual report was made by Robert M. Suttle, of Dallas, S. G. A. managing director. He said that the Southern Gas Association now represents more than 48 gas companies, 80 manufacturers and distributors of gas appliances and equipment and more than 800 individual members.

At the same session, national gas industry developments were summarized by R. H. Hargrove, and H. Carl Wolf, president, and managing director, respectively, of the American Gas Association. Mr. Hargrove's address which was presented in his absence by Frank C. Smith of Houston, directed attention to the rising national income and the consequent expansion of gas markets. As a result of national income jumping from 71 billion dollars in 1940 to 164 billions of dollars in 1946, new vistas have been opened for the expansion of the South's natural gas industry, he declared.

Mr. Wolf told the conference that advertising by local utilities is essential to support the new promotional efforts of the industry.

Throughout Thursday and Friday afternoons the delegates met in sectional meet-

PACIFIC COAST HOME SERVICE WORKSHOP

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division sales manager, Pacific Gas & Electric Company's San Francisco division, who pointed out how home service fits into the 1947 sales promotion program.

George Merkle, chairman of domestic sales under Lee and general supervisor of appliance sales and promotion for Southern California Gas Co., Los Angeles, lauded home service for its participation in the Range Council's search for suggestions on range improvements and reported that manufacturers have shown a real interest in some of the suggestions. Manufacturers were well represented at the conference by their Pacific Northwest representatives and distributors.

R. G. Barnett, vice-president and general manager, Portland Gas & Coke Co. and A. G. A. director, entertained the group at dinner at the University Club upon their arrival in Portland enroute home.

DODGE BODIES BAKED BY GAS OVENS

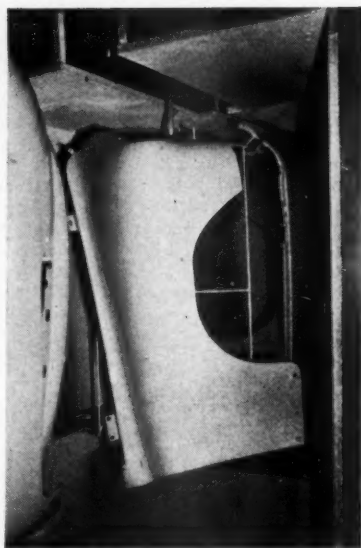
(Continued from page 216)

is important because other sheet-metal components like fenders, hoods and gravel shields are baked in ovens incorporated in other finishing lines. Thus, components produced in different parts of the same plant or in other plants will be the same final color, assuming that the enamel is identical.

Direct-fired ovens have another advantage in respect to finish colors. Relative absorption of radiated heat by various colors is not a factor. Heat absorption is entirely a function of the work-surface area and contour. Since these do not change during the model season, there is no need to change the heat input and timing of various oven zones.

Maximum safety is achieved by having only a single source of heat, adequately safeguarded, for each zone. As the heat source is outside the oven it is readily accessible at all times, encouraging better maintenance and reducing its cost. The heaters used are provided with automatic proportioning, one-valve-control burner equipment, requiring only an initial adjustment. This burner equipment correctly and automatically proportions the fuel and air over the entire range of input, insuring maximum fuel economy. Heater maintenance is negligible.

Temperature control is achieved by pneumatic throttling-type potentiometer



Front and rear fenders, hoods and stone shields are painted on other lines then pass into the new direct-fired ovens

controllers with light-gage couples for maximum sensitivity. The "off-on" type potentiometer controllers were used on the first experimental unit only, but have since been replaced by the throttling type.

Each zone is equipped with its own safeguard system so arranged that the heater cannot be started unless the combustion air blower is in operation and the circulating fan has been operating for a predetermined period of time to insure purging the oven or heating system of any vapors or fuel gas accumulated during shut-down periods.

A diagram of the safeguard system is shown in an accompanying illustration. The sequence of operation is: (1) The combustion air blower is started, the air pressure closing the pressure switch A. (2) The circulating fan is started, closing the air flow switch and energizing the time delay switch B. After a predetermined period of time sufficient for three oven changes of fresh air, the time delay switch energizes the heater starting circuit and the heater may be started by holding in the "start" button C. This opens the pilot gas valve D, and energizes the ignition transformer F, lighting the heater pilot. When the pilot flame contacts the electrodes of the flame unit G, the relay H energizes the main gas valve K and the main burner may then be lighted.

Failure of the combustion air or of the circulating air supply will shut the heater down and necessitate repeating the starting cycle. Failure of the pilot or the gas supply itself will also shut the heater down, but will not necessitate repetition of the starting cycle as this will not trip the time delay switch. The flame unit electrode is located within the main-burner combustion tunnel in such position that a pilot flame in contact with the electrode must ignite the main burner promptly. A small amount of fresh air from the combustion air supply is bled through the flame unit to keep it purged of combustion gases and prevent condensation within the unit.

Pertinent Features

One of the important aspects of direct-fired ovens is that the number and length of the heating zones can be varied to suit the job. Two zones, each equipped with a heater-fan unit powered by a 7.5 horsepower motor, are used in the dry-off ovens after wet-sanding. Six zones, varying from 30 to 60 feet long, are used in the finish-coat baking oven, but again the heater-fan units are powered with 7.5 horsepower motors. Thus, while direct-fired ovens have reduced to 35 minutes baking operations that once took as much as four hours to perform, it is a simple matter to assemble ovens with as many zones as required and later to alter the layout if necessary.

MINIMIZING NOISE OF EXTINCTION

(Continued from page 218)

maintain a fixed rate per square inch of port area. Under this condition the same reasoning as applied in the preceding paragraph holds. From a practical viewpoint the port area is varied by a change in port size, total input rate being held constant. In other words total input rate and number of ports are fixed. Under this condition a manipulation of the equation indicates that the following relationship holds for a variation in port size.

$$\frac{A_1}{A_2} = \left(\frac{d_2}{d_1}\right)^2$$

A_1 and A_2 = noise limits for two different port sizes

d_1 and d_2 = port diameters for two different port sizes

Applying this relationship it may be shown that if the noise limit for a burner having number 36 D.M.S. ports equaled 30 percent primary air, reducing the port size to a number 42 port for this same burner would increase the noise limit to approximately 33 percent primary air. With the condition under discussion, fixed total input rate and number of ports, it may be considered that a change in port size in the range of number 36 to 42 D.M.S. ports produces a relatively small effect on the noise limit. This indicates that the principal factor is rate per port rather than rate per square inch of port area, which conclusion is somewhat supported by the fact that the time element to approach the minimum rate necessary to support combustion is a function of the operating rate per port.

Note however that rate per port is not entirely the controlling factor. As port size is decreased the primary air value indicating the lower limit of the flashback zone increases. Consequently with a decrease in port size more dilution of the original air-gas mixture in the burner is required in order to produce a mixture which will be in the flashback zone.

A consideration of a limiting port size for noise of extinction indicates that it should be possible to reduce port size to a value at which noise of extinction would not occur regardless of the magnitude of the other factors in the equation. This limiting port size which would by itself prevent noise of extinction would probably be reached sometime before the maximum rate of the flashback limit for that particular port is less than the minimum rate necessary to support combustion.

The remaining factor is orifice pressure. The fact that the noise limit is a direct function of orifice pressure may be explained as follows. Assume a burner is rated at two inch pressure with the air shutter adjusted so that noise of extinction just occurs. In other words primary air injection is slightly higher than the noise limit. If the burner is now rated at six inch pressure and the air shutter is adjusted to obtain the same primary air injection as with the two inch pressure, the air shutter will be more nearly closed because of the better injection characteristics of the six inch

pressure condition. However, the air shutter in the more nearly closed position will offer greater restriction to the induction of diluting air after gas shut-off. Hence noise of extinction should not occur for the six inch pressure condition. Thus for any increase in orifice pressure the noise limit will increase.

Any outside condition which affects the time element required for dilution to form an explosive mixture or the time element required for the rate per port to drop below the minimum rate necessary to support combustion will affect the value of the constant in the equation. Thus the nature of the gas supply influences the shape and size of the flashback zone and hence the dilution requirements. Specific gravity of the gas influences the momentum of mixture in the tube after gas shut-off. Negative pressures in the combustion chamber will add to the momentum of the mixture especially if the mixer face is located outside of the chamber. On the other hand secondary air drafts across the mixer face may subtract from this momentum. Finally secondary air flow past the ports will affect minimum gas rates required to support combustion.

STRENGTHENING BONDS OF SERVICE

Continued from page 208)

which over the years has done more than any other single factor to improve, stabilize and increase respect for gas appliances. I refer to the A. G. A. Laboratories. Organized originally with the idea of improving the safety of appliances in the customer's home, these Laboratories have come to be in reality a symbol of the great American gas industry and a proof of what a modern, progressive industry can do to improve itself through a system of self-regulation. It is incumbent on both manufacturer and utility to keep this system effective and responsive to the changing needs of the times.

You are aware of the fact that there is in progress at this time a searching review of Laboratories' policies, practices, requirements and charges by a competent committee of manufacturers and utilities. This study will doubtless bring additional respect for and under-

standing of our Laboratories and the system under which they work. But I would caution you, bearing in mind expense factors with which all of us are faced every day and the increased complexity of our gas appliances, not to expect any great reduction in the cost of Laboratories' tests and inspections. After all the test again is a proof of quality and should not be confused with price.

Mutual Interests

Recognizing the community of interest between us, the manufacturers and utilities have from time to time found additional areas for cooperative effort. Industry research now a proven "must" could not be successfully prosecuted as it is today without the hearty cooperation of our two groups. The lines of demarcation between basic and applied research and between exploratory and product improvement research must be constantly examined and drawn. However, the very nature of our fuel dictates the necessity for a continual and enlightened program of industry research in order to bring additional results and service to our customers and profits to ourselves.

Our promotional efforts have more and more been touching common boundaries; they must be further integrated. National Advertising offers a really fertile field for cooperative effort and must be explored. Competitive conditions make necessary the expenditure of certain funds by the manufacturer to sell and keep sold his dealer and utility outlets. These expenditures are but wasted, however, if the ultimate customer—the utility consumer—is not sold on the advantage of gas and gas appliances.

There are many other realms of possible joint and cooperative action between manufacturer and utility which should be explored. Bearing in mind always that the manufacturer makes his profit from the sale of appliances and the utility makes its profit from the sale of gas we must not allow our common approach to these problems to fall into desuetude or worn-out patterns. The world moves on apace and competition is ever yapping at our heels.

I would be less than frank if I did

not pay high respect to the job which the gas appliance and equipment manufacturers have done and are doing in making and keeping the gas industry the outstanding industry that it is. There probably never has been a greater demonstration of faith in an industry than was demonstrated by you manufacturers in that marvelous exhibit of appliances and equipment at Atlantic City last Fall. I have been tremendously interested in watching the growth of your industry organization—G.A.M.A.—and learning of the aggressive programs which that organization is setting up and pursuing and also witnessing the fine cooperation which it is giving to the American Gas Association—also, in my mind, an outstanding organization.

We have demonstrated again and again our ability to meet common problems and to help one another in the solution of individual problems. I reemphasize that we are motivated by a common purpose—service to the ultimate consumer. And I say with confidence that we will forge stronger the ties between us, build a still stronger industry and both profit from the effort, to the extent that we dedicate our common efforts to the improvement of the public, which together "We Serve."

ANNIE DOESN'T LIVE HERE ANY MORE

(Continued from page 211)

utility we witness in the center of our community the decline of what was once a profitable investment for us; on the other hand, uncontrolled decentralization compels us to extend our service into new developments which for many years may yield no adequate return and in some extensions never will. We are between an upper and a nether millstone.

What has happened to our operating radius in recent years is indicated by the average miles-per-service-call travelled by our automobiles during the ten year period from 1932 to 1941. (Subsequent years were distorted by gasoline rationing and other abnormal conditions created by the war.)

In 1932, the record shows 2.12 miles per service call; in 1941, the comparable figure is 3.42 miles, an increase of 61 percent. Check this 61 percent with

an increase in population of less than four percent for the same ten year span—a ratio of more than 15 to one. Certainly this trend indicates increased customer costs, not only in investment but also in practically every other field of our operations. The condition which I have outlined discloses a fertile opportunity for the sales department to make a substantial contribution to its company's welfare and to the well-being of the entire community.

True, this condition is only one phase of city planning, but a most important one. Its successful solution will win the appreciation of city officials, business-

men, and the residents of areas affected. To the extent you succeed, your company will reap a harvest not only in monetary return but also in improved public relations.

So I say—gear your sales department to all civic movements which improve present living facilities and augur a sound expansion of your community. If we are indifferent to why and where and how Annie lives, we may be tolerating the development of a community which is neither healthful, aesthetic, moral, economical or profitable. And Annie may move so far away, that she will be hard to reach.

Personnel Service

SERVICES OFFERED

Manager Manufactured or Natural Gas Utility. Experience covers 20 years operations, consulting, inventory-valuation and new business. also L. P. Gas. Go anywhere East; interviews arranged. (50). 1541.

Utility lawyer, member New York, Maryland bars, 27 years' experience in gas, electric and transportation fields in private practice and with Federal and State governments, desires position counsel public utility or holding company. Salary \$10,000. 1542.

Sixteen years' experience in the industry:—**production, distribution, utilization**, purchasing, sales, rates, special studies, employee training, and customer relations are available to progressive property or manufacturer in a position of responsibility. College graduate, married, go anywhere. Best of reasons for leaving present successful and secure position. (40) 1543.

Gas Heating Engineer and experienced man in all types gas appliances since 1910. Would like connection with manufacturer who has production ready for the trade. 1544.

Controller, Treasurer, Executive Accountant. Twenty-one years' wide and varied utility experience as chief accountant, controller, and treasurer, with management background, including parent and subsidiary companies controllership and financial problems. Practical experience in all phases of utility accounting, financial and budgetary control and taxes. Desires position of responsibility. 1545.

Recent Graduate of Liquefied Petroleum Gas Institute, former **Manager** 2500 Meter Water Gas property, seeks new connection. Not averse to foreign service, having lived in Mexico and speaking Spanish. (35) 1546.

POSITIONS OPEN

Assistant to General Manager of New England Gas Utility—500,000 M annually. Prospect of succeeding to General Managership in three or four years. Graduate engineer with background of experience in operating water gas property preferred. Excellent salary prospects. Give full particulars in application. Confidential. 0482.

Gas Plant Engineer for plant in New England, having several years experience in coal and water gas manufacture. Supervisory position. Write fully, giving experience, salary expected and date available. Send photo. 0487.

Product Review Engineer. Graduate, young, to assist in product review and development work; field or production experience in gas heating or gas appliance designing, redesigning and testing desirable. This is not a routine research assignment. New ideas, imagination and inventiveness helpful. Those meeting these requirements please reply giving brief prospectus of experience. Confidential. Cleveland, Ohio. Salary \$250 to \$300. 0488.

Gas Engineer, age about 30, to act as Assistant General Manager for manufacturer of pressure control and national service organization. Starting salary \$400. per month. 0489.

Research Gas Engineer familiar with both theory and operation of all gas manufacturing processes and especially complete gasification of coal. Location in Middle Atlantic region. Good opportunity for man, preferably under 40, with good chemical or mechanical engineering education and ability to initiate and carry on new developments. Give full details of education, salary expected etc. 0490.

Engineer, cadet or apprentice required by one of the oldest makers of gas fired industrial, commercial and domestic heating equipment. Opening for a young man with a degree in mechanical electrical, chemical or related engineering, with aptitude for development, experimental, design and test work which will require a good head and a good pair of hands, recently out of college (or the service) with little or no working experience. He should expect to live in a small town and like it, at a beginning salary that he won't brag much about but with the opportunity to get more as soon as he is worth it. 0491.

Experienced Shift Foreman for growing 8 million daily Eastern CWG system; reports to Assistant Superintendent and will supervise overall operation of water gas plant. Give full details of experience, age, salary desired. 0492.

Heating Engineer for work in the development laboratory of large middle western manufacturer of central heating equipment; young man, sales personality, field experience desirable. Write, stating salary requirements. 0493.

Graduate Engineer with field experience on gas fired heating and water heating equipment, to take charge of field service training for firm with national distribution. Must have good personality and the ability to conduct service schools. Will be required to travel as territorial work demands. 0494.

Operating Engineer with C. W. Gas experience, college graduate, and demonstrated administrative ability to have entire charge of engineering and operating production department of large Eastern Gas Company. Excellent opportunity at attractive salary. 0495.

Home Economics Representative to take charge of department which will be organized consisting of one director and one or two assistants. Activities will include platform lectures, and other home service work covering foods and proper uses of appliances. Please write and give qualifications, age, education, experience, salary expected, etc. Correspondence strictly confidential. Good salary and excellent opportunity for advancement. 0496.

ADVISORY COUNCIL

ERNEST R. ACKER.....Poughkeepsie, N. Y.
FRANK H. ADAMS.....Toledo, Ohio
BURT R. BAY.....Omaha, Neb.
A. F. BRIDGE.....Los Angeles, Calif.
FLOYD C. BROWN.....Chicago, Ill.
LYMAN L. DYER.....Dallas, Texas
LESTER J. ECK.....Minneapolis, Minn.
E. F. EMBREE.....New Haven, Conn.
HENRY FINK.....Detroit, Mich.
RALPH L. FLETCHER.....Providence, R. I.
HAROLD L. GAIDRY.....New Orleans, La.
GEORGE S. HAWLEY.....Bridgeport, Conn.
FRANK E. HOENIGMANN.....Gardner, Mass.
W. ALTON JONES.....New York, N. Y.
L. E. KNOWLTON.....Providence, R. I.
MALCOLM LEACH.....Taunton, Mass.
J. L. LLEWELLYN.....Brooklyn, N. Y.
H. N. MALLON.....Bradford, Pa.
L. A. MAYO.....Hartford, Conn.
NORTON MCKEAN.....New York, N. Y.

C. E. PACKMAN.....Chicago, Ill.
J. J. QUINN.....Boston, Mass.
BRUNO RAHN.....Milwaukee, Wis.
O. H. RITENOUR.....Washington, D. C.
JOHN A. ROBERTSHAW.....Youngwood, Pa.
J. FRENCH ROBINSON.....Cleveland, Ohio
W. F. ROCKWELL.....Pittsburgh, Pa.
LOUIS RUTHENBURG.....Evansville, Ind.
B. A. SEIPLE.....Asbury Park, N. J.
C. V. SORENSON.....Fort Wayne, Ind.
MARCY L. SPERRY.....Washington, D. C.
T. J. STRICKLER.....Kansas City, Mo.
HARRY A. SUTTON.....Newark, N. J.
CHARLES A. TATTERSALL.....Syracuse, N. Y.
J. H. WARDEN.....New York, N. Y.
R. E. WERTZ.....Amarillo, Texas
HARRY K. WRENCH.....Minneapolis, Minn.
CHARLES G. YOUNG.....Springfield, Mass.
P. S. YOUNG.....Newark, N. J.

ASSOCIATED ORGANIZATIONS

Gas Appliance Manufacturers Association

Pres.—D. P. O'Keefe, O'Keefe & Merritt Co., Los Angeles, Calif.
Man. Dir.—H. Leigh Whitelaw, 60 East 42nd St., New York, N. Y.

Canadian Gas Association

Pres.—Lt. Col. Thomas Weir, Union Gas Co. of Canada Ltd., Chatham, Ont.
Exec. Sec.—Tr.—George W. Allen, 7 Astley Ave., Toronto.

Gas Meters Association of Florida-Georgia

Pres.—B. G. Duncan, South Atlantic Gas Co., Orlando, Fla.
Sec.—Tr.—J. W. Owen, Central Florida Gas Corp., Winter Haven, Fla.

Illinois Public Utilities Association

Pres.—C. W. Organ, Central Illinois Light Co., Springfield, Ill.
Sec.—Tr.—T. A. Schlink, Central Illinois Light Co., Springfield, Ill.

Indiana Gas Association

Pres.—E. D. Anderson, Northern Indiana Public Service Co., Hammond, Ind.
Sec.—Tr.—Clarence W. Goris, Northern Indiana Public Service Co., 500 Broadway, Gary, Ind.

Michigan Gas Association

Pres.—Henry Fink, Michigan Consolidated Gas Co., Detroit, Mich.
Sec.—Tr.—A. G. Schroeder, Michigan Consolidated Gas Co., Grand Rapids, Mich.

Maryland Utilities Association

Pres.—O. H. Ritenour, Washington Gas Light Co., Washington, D. C.
Sec.—Raymond C. Brehaut, Washington Gas Light Co., Washington, D. C.

Mid-Southeastern Gas Association

Pres.—C. B. Zeigler, Public Service Co. of N. C., Inc., Gastonia, N. C.
Sec.—Tr.—Edward W. Ruggles, North Carolina State College, Raleigh, N. C.

Mid-West Gas Association

Pres.—E. J. Otterbein, Iowa-Illinois Gas & Electric Co., Davenport, Iowa.
Sec.—Tr.—Roy B. Searing, Sioux City Gas & Electric Co., Sioux City, Iowa.

Missouri Association of Public Utilities

Pres.—J. F. Porter, Jr., Kansas City Power & Light Co., Kansas City, Mo.
Gen. Counsel—Wm. H. Allen, 101 W. High Street, Jefferson City, Mo.
Sec.—E. A. Beer, 101 W. High Street, Jefferson City, Mo.

Natural Gas and Petroleum Association of Canada

Pres.—S. A. Morse, Union Gas Co. of Canada, Ltd., Chatham, Ont.
Sec.—Jos. McKee, United Gas and Fuel Co. of Hamilton, Ltd., Hamilton, Ont.

New England Gas Association

Pres.—James A. Cook, Lynn Gas & Electric Co., Lynn, Mass.
Exec.—Sec.—Clark Belden, 41 Mt. Vernon St., Boston, Mass.

New Jersey Gas Association

Pres.—P. D. Gardner, Public Service Electric and Gas Co., Camden, N. J.
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